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ABSTRACT

This group of lessons introduces the student to the relationships of health care to social and sociological concerns. Lessons include: (1) discussion of social research techniques; (2) value clarification; (3) educational prerequisites for selected medical occupations; (4) simulations and models; and (5) family health. (RE)

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THE BIOMEDICAL INTERDISCIPLINARY CURRICULUM PROJECT

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BIOMEDICAL SOCIAL SCIENCE

UNIT 1

HEALTH AND SOCIETY

BASIC SOCIAL SCIENCE INQUIRY INTO HEALTH-RELATED PROBLEMS

STUDENT TEXT

SE 027 990

BIOMEDICAL SOCIAL SCIENCE

UNIT I

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SUPPORTED BY THE NATIONAL SCIENCE FOUNDATION

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READING: AMERICANS AND THEIR HEALTH

The following statements describe two opposing opinions about Americans and their attitudes toward health. Read them both and decide which one you think is more accurate.

Americans Are Preoccupied with Health:

Americans are always doing things to prevent contact with disease-causing germs. They worry constantly about dirt. They are the most sanitary people in the world. They not only keep their bodies and homes clean, they try to keep them odorless--cleaner than they have to be.

Americans also use drugs constantly. They have ready access to vitamins and over-the-counter drugs for headaches, itching, colds, flu, inability to go to sleep and inability to stay awake. Their medicine chests are crammed with pills, powders and syrups. Drugs are their armor against disease.

These things show that Americans are preoccupied with health. Health is always on their minds. They may not be consciously thinking about it all the time, yet they are constantly on the watch for a speck of dirt or a twinge of pain, and ever ready with a remedy.

Americans Ignore Their Health:

Americans never think about their health until they're forced to. They don't visit their doctors while they're still healthy; they wait until they're sick. They don't go to their dentists for regular checkups, they only go when they have a toothache. Health professionals spend the vast majority of their working hours with people who are already sick, trying to help them get well. They almost never see people who are healthy and want to know how to stay that way.

Americans do many things that they know are bad for their health, and they resent people who tell them that they shouldn't. They smoke cigarets, drink too much, eat terrible food and never get any exercise. They all know they're killing themselves, but they go right on doing it anyway. Then, when their bodies start to collapse from neglect, they expect health professionals to help them avoid the consequences of their unhealthful habits.

These things show that Americans really are not concerned with health. They avoid thinking about it. They avoid learning about it. If they already know something about it, they pretend that they do not know. Their own health is the last thing on their minds.

SOME DEFINITIONS OF HEALTH

1. Freedom from physical disease or pain.

2. The condition of being sound in body, mind and soul.

3. The ability of the organism to function effectively within a given environment. Since the environment keeps changing, good health is a process of continuous adaptation.

4. The individual's ability to rally from insults, whether chemical, physical, infectious, psychological or social. The signs and symptoms of disease are part of the bodily processes of coping with environmental insults.

5. A state of complete physical, mental and social well-being.

6. A measure of the body's success in keeping its internal environment stable while its external environment changes.

7. A function of the individual's unique genetic inheritance and the current and accumulated effects of his environment.

8. The absence of clinically identifiable symptoms.

9. The absence of disability.

10. Freedom from discomfort and "feeling bad."

11. A subjective sense of well-being.

12. The ability to perform functions required by an individual's social role.

13. The absence of anxiety and fear.

14. Being able to perform daily activities and maintain independence.

15. Physical fitness.

16. A state of fitness that is usual and expected in a particular cultural setting.

SAMPLE TALLY SHEETS

SEX IDENTITY AND CIGARET SMOKING

	Male	Female	Total
Never			
Sometimes			
Regularly			
Total			N=

HOSPITALIZATION AND ATTITUDE TOWARD PERSONAL HEALTH

	Yes	No	Total
Very Concerned			
Somewhat Concerned			
Not Concerned			
Total			N=

DRUG USE AND CIGARET SMOKING

Cigaret Smoking	Drug Use: Never	Sometimes	Regularly	Total
Never	9	4	2	15
Sometimes	7	1	2	10
Regularly	2	2	1	5
Total	18	7	5	N= 30

EVALUATION OF OWN HEALTH AND ATTITUDE TOWARD IT

	Excellent	Good	Poor	Total
Very Concerned				
Somewhat Concerned				
Not Concerned				
Total				N=

Note: "N=" is statistical shorthand. "N" signifies the total number of respondents. In each of the above examples, the totals going across the bottom row (the "total" row) should form the same grand total or "N" as the totals going down the last, or "total," column.

The example that compares drug use and cigaret smoking has been completed with fictitious data to illustrate how a completed tally of 30 respondents might appear. You can see at a glance that 18 respondents report that they never use drugs. Of these 18, 9 report that they never smoke cigarets, 7 report that they

sometimes smoke cigarets and 2 report that they are regular cigaret smokers. Looking at the same table from a different angle, a total of 10 respondents report that they sometimes smoke cigarets; 7 of these also report that they never use drugs. Of the remaining 3, 1 reports that he or she uses drugs sometimes and 2 report that they use drugs regularly. The bottom or "total" row tells you that the 30 respondents report as follows: 18 never use drugs, 7 use drugs sometimes, and 5 use drugs regularly. This bottom row adds to an "N" of 30. The last column reveals that 15 respondents report they never smoke cigarets, 10 say they sometimes smoke cigarets and 5 report they are regular cigaret smokers.

ASSIGNMENT: QUESTIONS ABOUT THE QUESTIONNAIRE

1. Review each item on the questionnaire you have responded to and tallied in class, and describe any problems a respondent might encounter in attempting to answer the item. Try rewriting each problem item so as to eliminate the problem you have identified.

2. For each item on the questionnaire, indicate whether the item will yield useful or interesting information about the topic of the questionnaire (attitudes and behaviors of Americans with regard to their personal health). For each item, give reasons for your conclusion that the item will or will not yield such information. For each item that you think will not yield such information, try writing one or more alternative items that would yield more useful or more interesting information.

3. For each pair of variables that the class has tallied, indicate what useful or interesting information might be gained by comparing these two variables, and why the information might be useful or interesting. Suggest other pairs of variables from the questionnaire that you think might be usefully compared.

4. Write three generalizations that are supported by the data. For each generalization, indicate which data support the generalization. Note that it may be possible to derive some generalizations from the raw tallies (the list of totals of responses to all items on the questionnaire) as well as from the tallies of pairs of variables.

READING: DESIGNING AND USING A QUESTIONNAIRE

People experienced in using questionnaires have arrived at several guidelines for using them effectively. Some of the more important rules they have discovered are briefly described below.

A. Questionnaire Construction:

1. Items should be clearly stated. It should be highly unlikely that two respondents reading the same item would get two different meanings out of it. The items should not include any ambiguous words, that is, words that can be taken to mean more than one thing in the context in which they appear. Items should not be vague. That is, a respondent should not have to think very hard in order to figure out what the question is or what his answer is.

2. Items should not encourage misleading answers. Items that ask for very personal information might encourage respondents to answer untruthfully. Unless the questionnaire is administered in an atmosphere of great trust or the respondent can feel certain that his answers will remain anonymous, the respondent may simply not want to reveal the truth about himself.

3. Each question should be included for a specific reason. A questionnaire is intended to get information about some particular subject, and usually also intended to get particular kinds of information about a subject. Therefore it is usually a good idea for the designer of the questionnaire to be very clear about what he is trying to find out before he writes the items. If the inquirer wants to know about similarities and differences between the attitudes or behaviors of males and females, then he should ask for the sex of each respondent; if he is not interested in comparing the responses of males and females, there is no reason to include a question about sex. If he wants to compare the responses of retired persons and working persons, then he should ask about the job status of the respondents; if he is surveying people who are not likely to be employed, such as high school students, then such a question may be inappropriate.

4. Wherever possible, items should be constructed to make tabulation and analysis easy. It is always easier to tabulate and analyze the responses to a questionnaire if the quesions are "closed," that is, if each item presents a list of possible answers and asks the respondent to check one or circle one. An "open" item--one that enables the respondent to say whatever he wants in response to the item--is harder to tabulate. However, it is sometimes necessary to use open items. Whether open items are necessary depends on what the inquirer is trying to find out. If he wants to know the exact amount of money a family spends on prescription drugs each year, he must use an open item; if he wants to know only approximately how much the family spends, he can construct a closed item, with a list of possible answers such as, "under $100; $100-$500; over $500 (circle one)."

5. Closed items should be constructed so as to give respondents a meaningful choice. What a "meaningful choice" is depends on who the respondents are and what the question is about. If all respondents are upper-middle-class Americans and an item about annual income provides the responses, "under $2500; $2500-$5000; over $5000 (circle one)," then all respondents will give the same response ("over $5000") and the inquirer will have no basis for comparing responses of the relatively rich and the relatively poor among his respondents. In order to construct good closed items it is usually necessary to know something about the answers that the respondents will give to the items.

B. Data Manipulation and Analysis:

1. Comparing Variables: There is no reason to compare responses on two variables unless one wants to know something about the relationship between those two variables. For example, there is no reason to compare data on sex with data on cigaret smoking unless one is interested in finding out whether females smoke more or less than males. If one wants to know only what percentage of the respondents smoke, there is no reason to compare data on cigaret smoking with anything else; it is only necessary to find the number who smoke and figure out what percentage of the respondents are smokers.

2. Making Generalizations: After the inquirer has tabulated his data and compared the responses to different pairs of variables, he may be able to make some generalizations from his data. For example, if he has compared data on sex with data on cigaret smoking and found that 50% of the females are smokers and only 25% of the males are smokers, he may conclude that twice as many females as males are smokers. However, he must be very careful to include information about which females and males he is talking about. He might have administered the questionnaire to male and female high-school students in one school, or in several schools in one city, or in several cities in one state, or in several states, or in several countries. He might have administered it only to wealthy students, or only to poor ones, or to a mixture that he believes is representative of the mixture of wealthy and poor people in his city, or in his state, or in his country.

In short, the respondents might be a representative sample of some larger population--or they might not. If the inquirer believes that the respondents are a representative sample of, say, all urban American high-school students, then he might generalize that "twice as many female urban American high-school students as male urban American high-school students are smokers." If he believes his respondents are a representative sample of urban high-school students only in his region of the country, or only in his state, or only in his city, or only in one school, then he must phrase his generalization accordingly.

READING: EMERGENCY

A battered old car swerved crazily into the hospital parking lot and screeched up to the emergency entrance. The doors flew open. A man jumped out of the driver's seat and ran around to the other side of the car. He took a large, awkwardly shaped bundle from the arms of the woman in the car and ran into the hospital with the bundle. The woman hurried in behind him.

The bundle was screaming. Inside the hospital, at the emergency admitting window, the man set it down on the floor. Its wrapper fell from around it--a blanket with a large patch near one corner stained deep red by fresh blood. In the middle of the blanket stood a boy about four. He was holding a bloody rag against the inside of his forearm, above his right wrist, and screaming.

The father spoke urgently into the admitting window. A calm female voice replied. The father spoke again, becoming agitated. He spoke English, but with a foreign accent. The voice from inside the window came back again, beginning to sound stern. The two people began to shout at each other through the little square opening.

The child stopped screaming for a moment and looked around him. He seemed to have noticed that nothing was happening, that he and his blood were being ignored. He looked for his mother. At first he did not see her, and he got ready to scream again. Then he saw her, sitting in one of several mismatched, armless chairs lined up against the opposite wall. She looked at him in a way the child had never seen before. She looked frightened. The boy began to scream again, louder than before.

The argument at the admitting window stopped suddenly. A young woman wearing a white coat had come out from a door somewhere and

knelt down beside the boy. The father turned to watch. The woman in the white coat carefully peeled the rag from the child's wrist. It was still bleeding freely, but not too heavily.

"Come with me," the woman said to the child. She took him by his good hand and led him around a corner and through a door. Big drops of blood formed a trail behind the boy. Before the father could move, the door was closed. He was shut out.

His wife began to cry. He turned around and looked at her. Then at the door where his son had disappeared. Then at the window where the woman had told him he must have insurance. He walked slowly to his wife's side and sat down.

Behind that door, a new argument had started. It was bigger: four people were in it, not counting the boy. One was the young woman in the white coat. She was a doctor, an intern. She was putting a pressure bandage on the cut in the boy's arm.

Another person arguing was the woman who had argued through the window with the boy's father. She was angry. She was talking about lawsuits, malpractice and large amounts of money, and about the fact that it wouldn't be her fault if the doctor got into trouble.

A third person, who hadn't much to say, was a clerical assistant to the woman behind the window. This young man tried to calm the woman and remind her that she couldn't control everything, that emergency cases were not all the same and, besides, this wasn't a very big one.

The fourth person involved in the argument was an older man, a doctor. He seemed to be concerned that the people arguing were making things worse for the child. He eventually got them to stop, and while the young woman doctor finished applying the bandage this man spoke reassuringly to the child.

Finally the woman in the white coat led the boy out into the waiting room. She brought him to his parents and seated him in a chair nearby.

"This is a bad cut, and it needs stitches," she said. "Some small arteries have been cut. It is very important that you take the child to Children's Hospital. You will not need to worry about money or insurance there. They will clean the wound thoroughly and stitch it up."

"Thank you," said the child's father. "Lets go." He led his family back out to the car. They got in and closed the door. The battered old car started with a grind and a bang, revved a couple of times and then lurched out of the parking lot.

READING: SEVEN POINTS OF VIEW ON "EMERGENCY"

In the story, "Emergency," each character has a unique point of view. All the characters are concerned, to one degree or another, with the cut on the boy's arm and what can be done to heal the wound. But in addition to that, each of these characters is concerned with other things. The following are brief sketches of these seven characters and their points of view. You will be asked to read one of these sketches and to write the story again, from the point of view of the character you have read about.

The Father:

The father is concerned about money. He has a job, but his pay is low and he has no insurance at all--not even on his car, although the law requires that he have car insurance. He would buy insurance if he could afford it, but he can't. This incident is the first contact he has had with health care since he and his family entered the country three years earlier. He knows health care is expensive and he will have to pay for it himself. He has brought his child to this hospital because it is the closest one to his home, where the child was injured. He did not expect to be turned down for not having insurance or a lot of money. He is angry because the hospital will not trust him to pay for the services his child needs. At the second hospital he will insist on paying.

The Admitting Lady:

This woman is concerned about authority and responsibility. She believes she is the only person who has authority to admit a patient. She also believes she is responsible to see that nobody gets admitted who shouldn't be admitted. As she understands the rules of the hospital, this boy should not be admitted. He is not insured, his family is obviously poor, it is not a life-and-death matter, and he can get treatment at another hospital in the community. The admitting lady tries to explai these things to the boy's father, who does not appear to be listening. Later, when the intern treats the child without his having been admitted, this lady is very upset. Someone else has made a decision to treat the child--someone who does not have authority to make that decision--and the admitting lady refuses to be responsible for the consequences of this unauthorized act. In arguing with the intern, she exaggerates the possible consequences; she really knows a malpractice suit is highly unlikely in such a trivial case.

The Clerical Assistant:

This young man has been working with the admitting lady for several months. He believes she is pretty good at her job, and he has learned to get along with her. He thinks she acts like a cog in a machine, which has no will or principles of its own and can only do what it is "supposed to." He has observed that most people act the same way in most situations. If people are in a group--especially a large group that lasts over the years and has rules of its own--they usually follow the rules. This young man tries to follow rules only in so far as that is necessary in order to get along with the group. For example, he follows the rules of the hospital in order to keep his job, because he needs the money. This young man is a student of what people expect of other people. He thinks the admitting lady is a person who always does what is expected of her, never really thinking either about what she wants to do or about what she should do.

The Mother:

The mother does not like this hospital at all. This is her first contact with medical care since entering this country. Several things about it are shocking to her, because they are so different from the way things are done in the country she came from. Here there is an argument over treating the child's wound; where she came from, a healer would go anywhere, at any hour, to treat anyone who needed help --no questions asked. Here there is talk about money; where she came from, payment was always discussed after treatment. Here the mother sees many people in the emergency admitting area, all of them apparently working for the hospital, yet none of them doing anything to help her son for several minutes. Where she came from healers work without helpers, but at least they don't waste time arguing. The mother sees her son taken into another room to be treated--separated from his parents and surrounded by total strangers. Where she came from, the healer was always someone familiar--a neighbor and friend if not a relative--and whenever the healer was working he did so in the presence of the entire family of the patient. The woman is surprised that the doctor does not speak to her or her husband until after the treatment is over; she is accustomed to having the healer tell the family what is wrong, explain the treatment he thinks is required, and ask the family for their advice about how he might help the patient and the family. Finally, the woman is surprised that she and her husband must take their son to another hospital in order to have the rest of the treatment done. Where she came from, one healer took care of everything.

The Intern:

This young woman has a moral dilemma. She knows that the hospital's rules prohibit her from treating the child if he has not been admitted. She does not believe it is right for her to violate these rules, since she has agreed to abide by them. On the other hand, she believes that she ought to help the child. He is bleeding, he and his parents are frightened, and it may take a half hour or longer to get the child into the other hospital and get treatment started. Before she uncovers the wound and looks at it closely, she does not know how serious it is. If the boy were bleeding from a large vein or artery, a delay of thirty minutes might be hazardous, for the loss of blood might endanger the oxygen supply to his brain, thus causing permanent brain damage. When she has seen the wound, she believes that she should bandage the wound to slow the bleeding and to calm the child and his parents, and that she should advise the parents of the importance of seeking further treatment. She bandages the wound and advises the parents even though the hospital rules prohibit her from doing so.

The Other Doctor:

The older doctor is concerned about how the boy's injury occurred and about how the boy and his family can best be helped. He is willing to let the child go without treatment, because he judges from the amount of blood he sees that the child will not suffer permanent

damage if he is rushed to the other hospital. He thinks the father should stop arguing and take the child to the other hospital. However, when the intern brings the child in, the older doctor does not oppose her. Instead, he thinks about what can best be done for the child under these new circumstances. He concludes that the worst immediate problem the whole family has is uncertainty and the fear that goes with it. While the intern works on the boy's wrist, the older doctor tries to persuade the others to shut up and calm down. This doctor is also concerned about the source of the boy's wound. He wonders whether the boy and the other family members are in danger of getting such serious wounds frequently, perhaps because of dangerous objects in their home or neighborhood. Finally, the doctor notes that the child appears underweight, and he wonders whether the child might have nutritional deficiencies--perhaps even a deficiency that would slow the clotting of his blood.

The Child:

The child is scared. Blood is coming out of him--more blood than he has ever seen--and it won't stop. His father is nervous and his mother is frightened; if the big people are anxious, he'd better be anxious too. A stranger is shouting at his father, and his father is shouting back. They have forgotten about him. Another stranger comes and drags him away. His mother and father are gone. The stranger is hurting him. Other strangers come and all the strangers start shouting at one another. The child does not understand what is happening to his body or what any of these people are doing. He is paralyzed with fear until he notices that the wound is covered with white cloth--he can't see any more blood--and the stranger who was hurting him leads him back to his parents.

READING: MEDICAL TECHNOLOGY

"Technology" refers to material things that people use for particular purposes--tools, instruments and machines, as well as drugs and other chemical substances--and also to techniques, or methods, that people have developed for doing particular things.

"Medical technology" refers to the technology that is used in the detection of disease, in the treatment of disease, in the prevention of disease and in research on health and disease.

Technology for detection includes a variety of clinical and laboratory methods. Technology for treatment includes the use by nonprofessional people of bandages and other simple appliances and of over-the-counter drugs (aspirin, cough syrups, etc.). It also includes the use by health professionals of sophisticated equipment (X-ray machines, lasers, artificial kidneys, etc.) and of prescription drugs. Technology for prevention includes the use of nutrition counseling, vitamins, exercise programs, immunization and other

preventive measures to keep people healthy. Technology for medical research includes practically all the tools and techniques used by chemists, physicists and biologists, as well as the tools and techniques used by doctors and hospitals. It is difficult to exclude any natural-science technology from the field of "medical research technology," for past experience has shown that a scientist working in almost any field may discover something that can be used to treat or prevent disease.

All technology is created, developed and used by people; people control it. Yet, in a large, wealthy and technologically advanced society such as ours, the use of technology is very difficult to control. There is a lot of it, many people use it, each person or group using it may have unique objectives in using it, and there is relatively poor organization and communication among all these people and groups.

Obviously, the use of medical technology has protected or improved the health of many Americans. Vaccines have virtually eliminated many diseases. Devices such as heart pacemakers enable many people to live relatively normal lives who would otherwise be seriously ill or dead. Understanding of the human organism and its requirements makes it possible to cure or prevent many diseases by changes in diet, exercise or environment, and by precise surgical intervention. Many of us can thank the advanced medical technology available in our society for the fact that we are healthy or even for the fact that we are alive.

Why, then, should anyone want to "control" the use of medical technology? What is wrong with letting it develop as fast as possible and be used by as many people as possible? The difficulty is that the use of medical technology doesn't only preserve health, cure disease and keep people alive. Sometimes it endangers health; sometimes it causes disease; sometimes it even kills people. Medical technology is a powerful tool. Like any other tool that people have invented, it can be used in many ways. The consequences of its use depend on how it is used, and for what purposes.

The use of much medical technology is already controlled, to one degree or another, in this society. The federal government and state and local governments have laws, administrative agencies and monitoring systems to control such things as which drugs can be used and which people can practice medicine (i.e. can use medical technology on citizens). Professional organizations of health workers also set and enforce standards for the use of medical technology. Research scientists, through their own professional organizations, sometimes attempt to ensure that the technology they create will not be used in ways more harmful than beneficial to mankind.

Some people believe, however, that people do not have enough control over the use of technology. They believe that medical technology will become more harmful than helpful in the future if its use is not controlled more closely, or in different ways, than at present.

READING: SEVEN POINTS OF VIEW ON THE FUTURE OF MEDICAL TECHNOLOGY

How should the society control--or not control--its use of medical technology in the future? This is a difficult problem. Part of the difficulty is due to the complexity of the technology itself: few, if any, individuals know enough about chemistry, physics, electronics, anatomy, physiology and medicine to understand how all of our medical technology works. In fact, there are some parts of our technology that nobody understands. Nobody knows, for example, how aspirin kills pain; but everybody knows it does, and therefore it is part of our medical technology.

But there is more to this problem than the complexity of the technology. For the problem, as we have stated it, is, "How should the society control--or not control--its use of medical technology in the future?" And the society is at least as complicated as the medical technology it has created. Within the society there are many points of view, many opinions about what should be done, many ideas about what is important and what is not. By examining a few of these points of view, one at a time, we can get an idea of the complexity of the society, as well as the complexity of its problems.

The following are statements that might be made by individuals who have different points of view, but who are all concerned, for their own reasons, about the future use of medical technology. These are certainly not all the points of view that Americans have about the future of medical technology; they are only a selection.

Distribution of Resources:

The society has limited resources: limited numbers of trained scientists and technicians, limited facilities for training new ones, limited quantities of materials for making machines and instruments, limited supplies of energy for running the machines, and so on. How much of these limited resources should go to medical technology? Should the society invest more or less of its resources in medical technology than in military preparedness, art education, space exploration, new housing, new forms of transportation?

Once it has been decided how much of the society's resources should be put into medical technology, how should those resources be divided up? Should more go into research or into medical care? Of the share that goes into medical care, should more go into preventive care or into treatment of people who are already sick? Of the resources that go into research, should more go into diseases that affect relatively few people but cause great suffering, such as sickle-cell anemia, or should more go into diseases that affect everybody all the time, but cause less suffering to the individual, such as the common cold?

Allocation of Responsibility:

Decisions must and will be made about the future use of medical technology. Even the decision to do nothing, to let things go on as they are, is none the less a decision. Decisions about the future of medical technology in America are decisions made for the whole society. Who should make these decisions? Who should be responsible for the use of medical technology? Who should have authority over it?

Should the decisions be made by experts? If so, which experts? Should responsibility rest with physicians, biologists, physicists, chemists, electronic engineers, or some combination of these? Should some share of authority also rest with government? If so, which levels of government, and how large a share of the authority? Should government set guidelines and experts make day-to-day decisions? Should government make all the decisions and tell experts what they are required to do? What branch or branches of government should have authority over medical technology? Should the responsibility rest with the Congress and state legislatures, with administrative bureaucracies, or with courts, which have the power to interpret and apply already existing laws to fit new situations?

Does the Constitution protect freedom of inquiry? Is it unconstitutional for anybody to place limits on the things a scientist can do research on? What about research using human subjects? Does the Constitution require that these subjects be protected in any way against things that researchers might want to do to them? What other rights do ordinary citizens have in this matter? For example, should the government protect them against dangerous or useless drugs? Against dangerous or useless machines or surgical procedures? Or should citizens be free to use whatever medical technology they wish to use on their own bodies?

Institutions:

Practically all human activities are carried out within more or less organized groups that outlive their individual members, and the creation and use of medical technology is not an exception. What we call "society" may be thought of as the sum of all organizations of people in a given territory. American society consists of countless groups and organizations, which can be divided into categories such as "the economy" (which includes producers, sellers and consumers), "the polity, or state" (which includes government and citizens), and "education" (which includes schools, teachers and students). These categories are called institutions. Every citizen participates in most or all of them.

Medical technology and its use affects and is affected by all institutions in society. Consider the institution of education. Much medical research is done in universities. Health professionals go to medical schools and other schools to learn how to use medical

technology. Ordinary citizens learn a little bit about health, disease and medical technology in public schools. In short, the institution of education in this society already exercises a large amount of influence over the development and use of medical technology.

But institutions, like technology, are created and used by people; they can be changed or kept the same. How should the institution of education be organized to control (or not to control) the use of medical technology? Should the development of new technology be left up to experts in highly specialized fields in natural science? Should experts in other specialized fields, such as psychology, ethics and sociology, also have a say? Should all the experts also listen to "generalists," people who know a little bit about a lot of things instead of a lot about one thing?

What about the education of health professionals? Should the institution of education be training more or fewer doctors, dentists, nurses and so forth? More generalists in medicine and fewer specialists, or vice-versa? More experts in preventive medicine and fewer in treatment of people who are already sick, or vice-versa?

And what about the education of ordinary citizens? Do people know enough about health? Do they know enough about the existing medical technology? About preventing disease?

Shared Ideas and Traditions:

In any society, people pass down from generation to generation a large body of information, beliefs and ways of doing things. These include technology--all of it, medical and otherwise--but they also include other things, such as language, beliefs about what is real and what is not (e.g., whether there are spirits, or souls, in all things, or only in living things, or only in people, or whether there are none at all), and beliefs about right and wrong.

As these things pass from generation to generation, they also change. Some of them change faster than others. It has been argued, for example, that technology changes faster than ideas of right and wrong; thus, throughout history, people have developed new tools and methods faster than they have developed new moral guidelines for using them, and therefore have sometimes used new technology in ways that they later came to feel were wrong.

Among the ideas that people pass down are many ideas about health and disease--ideas about what "health" is, what "disease" or "illness" means, what "causes" disease and what "cures" disease. In a large and complex society such as ours, there is not just one idea about any one of these things; there are many, passed down by different groups of people and in different parts of the country. Some of these ideas may conflict, to one degree or another, with ideas that have come from medical research and medical practice--that is, ideas created by medical technology.

How should these conflicts be settled? If a parent believes that his child can be cured of a certain disease by prayer and fasting, and a doctor says the child can be cured only by a certain drug, what should be done about the child's disease? If a person believes that he can remain healthy by eating brown rice and meditating, and a nutritionist says he must eat a balanced diet to stay healthy, what should be done about the person's diet? If a person believes his disease can be cured only by a ceremony for exorcising an evil spirit, but a public health nurse says he probably needs an operation, what should be done about the person's disease? Should these people be forced to change their beliefs so that they agree with the ideas produced by technology? Should these people be free to hold their beliefs and pass them down to succeeding generations, regardless of what scientists think? Should some compromise be sought?

Thinking, Emotions and Motivation:

Medical technology is, of course, a product of the human mind. The mind is very complex, and no one claims to understand it completely. We do know, however, that medical technology can be turned on its creator: it can be used to change the way people think, the way they feel, and their willingness to do or not to do certain things.

One of the most powerful kinds of medical technology is the use of drugs. Drugs can be used to eliminate pain--probably their oldest use in medical technology. But they can also be used to do other things, such as calming down people who are excited and cheering up people who are depressed. By and large, these drugs do not prevent or cure illness; they only make some of the symptoms go away. If the drugs are discontinued, the symptoms come back. In addition to drugs there are surgical procedures (such as destroying or disconnecting certain parts of the brain) that can be used to change the way people think or feel. The changes are usually irreversible: permanent. Finally, there are nonsurgical procedures such as the application of electric shock to the brain, which can also be used to alter the mind and which may also have irreversible effects.

How should these drugs and procedures be used? How should their use be controlled? Should health professionals be allowed to decide when it is appropriate to use technology to change people's minds? Should such technology be used only with the consent of the patient? Should such technology be used only on people who volunteer themselves for treatment of mental illness, or should it also be used on people who have committed crimes? On children who are disruptive or unable to learn in school? Should all people's minds be considered sacred--too sacred to be interfered with by drugs, surgery or shock? Or should there be exceptions and, if so, what exceptions?

Interaction with Environments:

Every human organism is in constant interaction with its external environment: with the other people around, with other animals and with plants (especially in the form of food), with air and water, and with a great variety of nonliving objects, some made by people and some not. Changes in the organism may affect its environment, and changes in the environment may affect the organism.

At the same time, every human organism is an environment, in which many microscopic organisms live all the time. Some of these organisms are necessary for the life and health of the human body they live in; some do not affect it much one way or another; and some can make it sick if there are too many of them or if they get in the wrong place. In this internal environment, as in the external one, things are related: a change in one thing causes changes in other things.

Most human technology consists of tools and methods that affect the external environment in one way or another, as by taking food from it, building shelter in it, taking fuel from it or leaving pollutants in it. Some uses of medical technology, such as cleaning contaminated water or spraying to kill the larvae of parasites, also affect the external environment. However, most medical technology is designed to affect the internal environment: the body and the things that live in it.

Things in either environment are so closely related, however, that when people do something in order to cause one change, they often cause other changes as well--some of them unpredictable and some of them dangerous. For example, spraying a pond to kill insect larvae might also kill fish or other animals, including people. Injecting an antibiotic to kill disease-causing bacteria might also kill bacteria that are helpful or even necessary to the health of the human organism they live in.

How should the effects of medical technology on our environments --both external and internal--be controlled? Should new technology be tested before it is put into general use, so that people will know what changes the technology will cause in addition to the change that is desired? If it is found that undesirable changes will probably result, should the new technology be used anyway? Should it be used only in certain situations--for example, when it is very unlikely that the undesirable effects will be irreversible, or when it is obvious that the undesirable effects are less important than the desired effect? Or should technology that might have undesirable effects be outlawed?

Values:

Planning for the future of medical technology requires making decisions. No matter who makes them or what they are about, decisions require values. Values are needed as standards for judging which things are important and which are not, what should be done and what should not, which old things should be kept and which discarded, what kinds of new things should be sought or created and what kinds should not. And, of course, values are needed as standards for judging who should make all these decisions.

In many situations it is not hard to make a decision. If the decision is simply between curing a person and letting him get sicker, the only value one needs is the idea that it is better to be healthy than sick. However, other decisions are harder, and often the reason they are harder is that they involve more than one standard, more than one value--and that these two values dictate two different outcomes for the decision.

As an example of this sort of value conflict, consider what the government might do about cigaret smoking. It might place no restriction on smoking, or restrict it to persons above a certain age, or make it illegal; it might permit unrestricted advertising of cigarets, or place some restrictions on advertising, or ban all cigaret advertising, or even place its own advertisements designed to discourage smoking.

Two important values are related to this problem, and they are in conflict. One is freedom: the right of tobacco farmers and cigaret manufacturers to follow their trades, and the right of individuals to determine what they will put into their bodies. The other value is health, particularly the obligation of the government (if it has one) to protect the health of the citizens.

Which way the government settles this problem might indicate how important it thinks these two values are. If freedom is much more important than health, there might be no restrictions on smoking; if health is much more important than freedom, there might be no cigarets; if the two values are about equally important, there might be some kind of compromise--limited restrictions on smoking, and limited protection of the health of citizens.

Freedom and health, as described above, are related to many decisions about medical technology. There is not only the freedom of smokers and the cigaret industry, but also the freedom of health professionals, of research scientists and of citizens who might receive treatment against their will. Government might be obligated to look out for the health of the citizens, but the citizen might also be obligated to look out for his own health, and businesses, schools, religious organizations, communities and families might be obligated to look out for the health of the people whose lives they affect.

Some other values that affect decisions about the use of mecical technology are briefly listed below.

Individual Initiative vs. Social Responsibility: Should individuals be totally responsible for their own health? Should the society be totally responsible for the health of the citizens?

Democracy vs. Efficiency: Should all decisions about medical technology be made by the citizens or their elected representatives? Should all these decisions instead be made by scientists and other experts?

Man vs. Earth: Should all methods of preventing or curing disease be used, regardless of their effects on the external environment? Should all methods that upset the external environment be outlawed?

HEALTH CAREERS

The following is a list of selected health careers. The list is divided into 15 sections, according to the general types of work people in the careers are likely to do. Within each section, careers are divided according to the amount of education required for employment. For your reference, here is a list of the 15 categories of health careers, followed by a list of the levels of education according to which the careers are divided.

Categories of Health Careers:

1. basic science and engineering

community health services:

2. mental health services
3. social services
4. health education and communication services
5. environmental health services

6. dental services
7. diagnostic laboratory services
8. dietetic and nutritional services
9. health institutional and health service management
10. medical appliance technology and related services
11. medical and related services
12. nursing and related services
13. pharmaceutical and related services

14. rehabilitation and therapeutic services

15. vision, speech and hearing services

Education Categories:

one year or less beyond high school

associate degree and other pre-baccalaureate
(i.e., less than four years of college)

baccalaureate and pre-baccalaureate
(i.e., four years of college or less)

primarily baccalaureate
(i.e., four years of college)

primarily post-baccalaureate
(i.e., more than four years of college)

1. BASIC SCIENCES AND ENGINEERING

Associate Degree and Other Pre-Baccalaureate

Medical Electronics Technician

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Biomedical Engineer Technician (see also Medical Appliance Technology)
Genetic Assistant

Primarily Post-Baccalaureate

Anatomist
Bacteriologist
Biochemist
Biologist
Biomathematician
Biomedical Engineer (see also Medical Appliance Technology)
Biophysicist
Clinical Chemist (see also Diagnostic and Laboratory Services)
Endocrinologist
Entomologist
Epidemiologist
Geneticist
Hematologist (see also Medical and Related Services)
Microbiologist
Parasitologist
Pharmacologist
Physiologist
Public Health Biologist
Public Health Chemist
Public Health Microbiologist
Serologist
Spectroscopist
Virologist

2. COMMUNITY HEALTH SERVICES: MENTAL HEALTH

One Year or Less Beyond High School

Community Mental Health Worker
Psychiatric Aide
Psychiatric Technician

Primarily Post-Baccalaureate

Mental Health Educator
Psychiatric Social Worker
Psychiatrist (see also Medical Services)
Psychologist:
- Clinical Psychologist
- Counseling Psychologist
- School Psychologist
- Social Psychologist

Psychometrist

3. COMMUNITY HEALTH SERVICES: SOCIAL SERVICES

One Year or Less Beyond High School

Home Health Aide
Homemaker
Social Work Aide

Associate Degree and Other Pre-Baccalaureate

Public Health Assistant
Social Work Assistant

Primarily Post-Baccalaureate

Medical Social Worker:
- Case Work
- Group Work
- Community Organization and Planning

Public Health Social Worker

4. COMMUNITY HEALTH SERVICES: HEALTH EDUCATION AND COMMUNICATION

Associate Degree and Other Pre-Baccalaureate

Computer Programmer

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Computer - Applied Science Programmer
- Technical Programmer

Health Information Specialist
Medical Illustrator
Medical Photographer
Medical Record Administrator (see also Health Institutional Management)

Science Writer
Statistical Clerk
Technical Writer

Primarily Post-Baccalaureate

Biostatistician
Health Educator
Medical Economist
Medical Education Director (see also Health Institutional Management)
Medical Sociologist
Public Health Statistician
Social Research Analyst
Training Director (see also Health Institutional Management)

5. COMMUNITY HEALTH SERVICES: ENVIRONMENTAL HEALTH

One Year or Less Beyond High School

Environmental Aide
Sanitary Technician (Engineering Technician)

Associate Degree and Other Pre-Baccalaureate

Environmental Technician (Environmental Health Technician)

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Food and Drug Analyst (see also Pharmaceutical and Related Services)
Food and Drug Inspector (see also Pharmaceutical and Related Services)
Radiation Protection Specialist

Primarily Post-Baccalaureate

Allergy Environmentalist
Environmental Health Engineer
Environmental Health Scientist (Ecologist)
Food Technologist (Food Technology Specialist) (see also Pharmaceutical and Related Services)
Health Physicist
Industrial Hygienist (Industrial Hygiene Engineer)
Public Health Sanitarian
Public Health Toxicologist
Radiologic Health Technologist:
- Radiobiologist
- Radiochemist
- Radiologic Engineer
- Radiologic Physicist
- Radiopharmacist

Sanitarian
Sanitary Engineer

6. DENTAL SERVICES

Associate Degree and Other Pre-Baccalaureate

Dental Assistant
Dental Hygienist
Dental Laboratory Technician
Dental X-Ray Technician

Primarily Post-Baccalaureate

Dentist:
- Oral Pathologist
- Oral Surgeon
- Orthodontist
- Pedodontist
- Periodontist
- Prosthodontist
- Public Health Dentist

7. DIAGNOSTIC AND LABORATORY SERVICES

One Year or Less Beyond High School

Certified Laboratory Assistant
Histologic Technician
Medical Laboratory Aide

Associate Degree and Other Pre-Baccalaureate

Laboratory Technician (Medical Laboratory Technician)

Baccalaureate and Pre-Baccalaureate

Certified Laboratory Technician
Cytotechnologist

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Chemistry Technologist
Medical Technologist
Microbiologist

Primarily Post-Baccalaureate

Bioanalyst
Blood Bank Technologist
Clinical Chemist (see also Basic Sciences and Engineering)
Medical Technologist Specialist in Chemistry
Medical Technologist Specialist in Hematology
Medical Technologist Specialist in Microbiology
Nuclear Medical Technologist
Pathologist (see also Medical Services)

8. DIETETIC AND NUTRITIONAL SERVICES

One Year or Less Beyond High School

Dietary Aide
Diet Clerk
Dietetic Worker

Associate Degree and Other Pre-Baccalaureate

Dietetic Assistant (Food Service Supervisor)
Dietitian Technician (Nutrition Care Services)

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Administrative Dietitian
Chief Dietitian
Clinical (Therapeutic) Dietitian
Dietary Consultant
Dietetic Intern
Dietitian
Hospital Food Service Administrator (see also Health Institution Management)

Primarily Post-Baccalaureate

Nutritionist
Public Health Nutritionist
Research Dietitian
Research Nutritionist
Teaching Dietitian

9. HEALTH INSTITUTIONAL AND HEALTH SERVICES MANAGEMENT*

One Year or Less Beyond High School

Medical Office Assistant
Medical Receptionist
Pre-Admissions Counselor
Safety Officer

Associate Degree and Other Pre-Baccalaureate

Medical Record Technician

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Admitting Officer (Admitting Supervisor)
Controller (Business Manager)
Executive Housekeeper

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*Institutional management, clerical and maintenance positions which generally parallel those found in business and industry and require no specialized knowledge or training in health care are not included in this listing.

Hospital Engineer
Hospital Food Service Administrator
Medical Record Administrator (Medical Record Librarian) (see also Health Education and Communication Services)
Public Relations Director
Purchasing Agent
Health Program Advisor
Volunteer Director

Primarily Post-Baccalaureate

Clinic Director
Hospital Administrator
Information Systems Director
Medical Care Administrator
Medical Education Director (see also Health Education and Communication Services)
Nursing Home Administrator
Personnel Director
Public Health Administrator
Purchasing Director
Training Director (see also Health Education and Communications Services)

10. MEDICAL APPLIANCE TECHNOLOGY AND RELATED SERVICES

One Year or Less Beyond High School

Cardiovascular Technician
Dialysis Assistant
Electroencephalograph (EEG) Technician
Intravenous Technician
Orthotics Technician
Prosthetics Technician
Respiratory (Inhalation) Therapy Technician

Associate Degree and Other Pre-Baccalaureate

Computer Operator in Health Data
Electrocardiograph (EKG/ECG) Technician
Hyperbaric Chamber Technician
Medical Electronics Technician
Nuclear Medicine Technician
Pulmonary Function Technician
Radiologic Technologist (X-Ray Technician)
Renal Dialysis Technician
Respiratory (Inhalation) Therapist
Extracorporeal Circulation Specialist
Health Testing Technician

Baccalaureate and Pre-Baccalaureate

Biomedical Engineering Technician (see also Basic Sciences and Engineering)

Orthotist
Prosthetist
Radiation Therapy Technician
Health Physics Technician

Primarily Baccalaureate (some with post-baccalaureate clinical training)
Radiation Therapy Technician

Primarily Post-Baccalaureate

Biomedical Engineer (see also Basic Sciences and Engineering)
Radiation Therapy Technologist

11. MEDICAL AND RELATED SERVICES

One Year or Less Beyond High School

Animal Keeper
Animal Technician
Medical Emergency and Ambulance Technician (Emergency Medical Technician)
Medical Secretary
Veterinary Hospital Attendant

Associate Degree and Other Pre-Baccalaureate

Laboratory Animal Technician (Veterinarian Technician)
Medical Assistant
Medical Assistant in Pediatrics (Pediatric Assistant)
Physician's Assistant:
- Assistant to the Primary Care Physician
- Orthopedic Physician's Assistant
- Urologic Physician's Assistant

Pediatric Assistant

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Animal Scientist
Child Health Associate

Primarily Post-Baccalaureate

Osteopathic Physician
Podiatrist
Physician:
- Anesthesiologist
- Cardiologist
- Dermatologist
- Flight Surgeon
- General Practitioner
- Gynecologist
- Intern
- Internist
- Medical Officer
- Neurologist
- Neurosurgeon
- Obstetrician
- Ophthalmologist
- Orthopedic Surgeon

Otolaryngologist
Pathologist
Pediatrician
Physiatrist (Physical Therapist)
Plastic Surgeon
Police Surgeon
Proctologist
Psychiatrist
Radiologist
Urologist
Thoracic Surgeon
Family Practitioner
Colon and Rectal Surgeon
Specialist in Preventive Medicine

Veterinarian:
Anatomist
Bacteriologist
Epidermologist
Laboratory Animal Care
Livestock Inspector
Meat Inspector
Parasitologist
Pathologist
Pharmacologist
Physiologist
Public Health
Virologist
Virus-Serum Inspector

12. NURSING AND RELATED SERVICES

One Year or Less Beyond High School

Nurse's Aide:
general
Obstetric Aide
Pediatric Aide
Surgical Aide
Psychiatric Aide
Nursing Assistant
Operating Room Assistant
Orderly
Practical Nurse
Surgical Technician

Associate Degree and Other Pre-Baccalaureate

Licensed Practical Nurse (LPN)
Licensed Vocational Nurse (LVN)
Psychiatric Technician
Urology Technician

Baccalaureate and Pre-Baccalaureate

Registered Nurse (RN):
Clinical--Coronary Care
Intensive Care
Midwife
Pediatric
Psychiatric
Community-Industrial
Public Health
School Nurse

Primarily Baccalaureate (some with post-baccalaureate clinical training)

Nurse Anesthetist

Primarily Post-Baccalaureate

Head Nurse
Nurse Instructor
Nurse Practitioner
Nurse Supervisor

13. PHARMACEUTICAL AND RELATED SERVICES

Associate Degree and Other Pre-Baccalaureate

Hospital Pharamacy Technician
Pharmacy Assistant

Primarily Baccalaureate (some with post-baccalaureate clinical training)
Food and Drug Analyst (see also Environmental Health Services)
Food and Drug Inspector (see also Environmental Health Services)
Food Technologist (see also Environmental Health Services)
Pharmacist:
- Community
- Hospital
- Technology and Quality Control

Pharmaceutical Chemist

Primarily Post-Baccalaureate

Pharmacology Specialist

14. REHABILITATION AND THERAPEUTIC SERVICES

One Year or Less Beyond High School

Occupational Therapy Aide
Physical Therapy Aide
Vocational Rehabilitation Aide

Associate Degree and Other Pre-Baccalaureate

Occupational Therapy Assistant
Physical Therapy Assistant

Baccalaureate and Pre-Baccalaureate

Corrective Therapist
Educational Therapist
Home Economist in Rehabilitation
Manual Arts Therapist
Music Therapist
Occupational Therapist
Physical Therapist
Reading Therapist
Recreational Therapist
Vocational Rehabilitation Counselor

15. VISION, SPEECH AND HEARING SERVICES

One Year or Less Beyond High School

Optician Apprentice

Associate Degree and Other Pre-Baccalaureate

Dispensing Optician
Optical Technician
Optometric Assistant
Orthoptic Technician

Baccalaureate and Pre-Baccalaureate

Orthoptist

Primarily Post-Baccalaureate

Audiologist
Ophthalmic Technician
Optometrist
Speech Pathologist
Speech Therapist

QUESTIONS ABOUT HEALTH CAREERS

You will be asked to learn as much as you can, in a few days, about what it would be like to work in a particular health career. You will then be asked to share what you have learned with the rest of the class, and to identify similarities and differences between the career you have studied and the careers that other members of the class have studied.

In working on this assignment, remember to concentrate on the individual level of analysis. That is, learn as much as you can about what you would do, think and feel, what you would need to know, how you would get the needed training and so on.

While you are working on this individual level, you can approach the career you are studying from several points of view. The seven points of view that have been introduced in previous lessons will be useful. Below you will find some sample questions representing each of these points of view.

In working on this assignment you can also concentrate on several dimensions of health. You have already studied three dimensions of health in previous lessons: one is the dimension of attitudes, opinions and beliefs. What is health? What do people think health is? Another is the dimension of medical technology. The third is the dimension of roles and relationships. (You studied the roles and relationships of some health workers, one client and some family members in your work on the story, "Emergency.") A fourth dimension of health, which you have not studied yet in this course and which you will learn more about in Biomedical Science, is the dimension of causation, prevention, detection and treatment of disease.

Below are two sets of questions. The first set is divided into seven points of view. The second set is divided into four dimensions of health. These are certainly not the only questions you will find useful, but they will help you to think of other questions of your own.

Points of View:

Distribution of Resources: A person trained for a health career is part of a society's health resources. In getting training, a person needs to use other resources, such as energy, intelligence and money. In working at a health career, the worker receives resources in return for his work and his knowledge.

How great is the demand for people in this career?

Is the demand likely to grow or shrink? That is, how hard will it be for you to find a job?

How much does the training for this job cost? Are other resources (besides money) needed for training?

How much does this job pay?

Allocation of Responsibility: People working in some health careers have a great deal of responsibility for decision-making. People in others have very little. In practically all health careers there are decisions that are already made, by law: decisions about what one must do, about what one must not do, and even about whether one will be allowed to work at the career one has chosen.

What legal requirements must you satisfy in order to work in this career?

What legal obligations would you have if you were working in this career?

What legal restrictions would limit your freedom of action and decision-making if you were working in this career?

Institutions: In one way or another, a person working in a health career is part of all the major institutions of society: the economy (see also "Distribution of Resources" above), the polity, or government (see also "Allocation of Responsibility"), education, the family and religion.

Economy:

Would you be working in an organization if you chose this career? If so, what kind of organization? Would your position be high, low or in the middle?

Polity:

Do people working in this career have a professional organization? Do they, as individuals or as a group, influence the government? Do their opinions affect laws about their jobs? About other health matters? About matters not related to health?

Education:

What kind of training do you need to do this job? Formal education, in a school? On-the-job training? Both? What kind of certificates do you need? Where can you get the training and certificates you need?

The Family:

Would you be working with whole families in this career? How would your work affect families (if at all)? Would there be occasions when your work would strengthen a family or bring a broken family together? Would there be occasions when your work might weaken a family or drive a family apart?

Would you be able to do your work without separating a patient or client from his family?

Religion:

Would the work you would do in this career violate any of your religious beliefs?

Could the work you would do in this career violate any religious beliefs that your clients or patients might hold?

Shared Ideas and Traditions: Working in a health career a person has several sets of shared ideas and traditions to think about: his own, those of his fellow workers and those of his patients or clients.

Your patients or clients might have ideas and traditions different from yours. What kinds of ideas might they have that would make your job harder if you were working in this career?

Your fellow workers' ideas and traditions may also be different from yours. What sorts of ideas might these people have? Might there be conflict and misunderstanding between you and your fellow workers because you do not share the same ideas?

Might your own ideas and traditions conflict with some of the things you have to do in this career?

Thinking, Emotions and Motivation: In many health careers, workers have contact with patients or clients who are mentally or emotionally abnormal. Many people in health careers also find that their own work is a mental or emotional strain for them and their fellow workers.

In this career, would you be working with people who have mental or emotional problems?

Would it be your job to help your patients or clients with their mental or emotional problems?

Might your clients' mental or emotional problems interfere with your work, even if it is not your job to help them solve these problems?

What sorts of emotional stresses would you be under if you had this job?

Would you want this job in the future? Why, or why not?

Interaction with Environments: Individuals, families, communities and societies are always interacting with their environments. In most health careers, workers affect the relationships between persons or groups and their environments.

In this career, would you influence the relationships between individuals and their external environments? Would you primarily influence their internal environments? What sort of influence would you have? Would you help keep these environments running smoothly? Would you have to create imbalance

in one environment in order to preserve balance in another part of the same environment?

Would you influence the relationships between families and their environments?

Would you influence the relationships between a neighborhood or small community and its environment?

Would you influence the relationships between people and an urban environment?

Would you influence the relationship of the whole society to its environment?

Values: People in all walks of life face value conflicts all the time. People working in health careers may face them more often, because these people work all the time with matters of health and disease, comfort and pain, life and death.

Working in this job, what sorts of value conflicts might you have to deal with? What values would others expect you to serve? How might these conflict with your own personal values?

Dimensions of Health:

Technology:

In this career, would you be developing new technology?

What already-existing technology would you be using?

How much control would you have over the use of medical technology?

Attitudes, Opinions and Beliefs:

Would it be your job, in this career, to change the attitudes opinions or beliefs of your patients or clients?

How might you affect the thinking and beliefs of your clients?

How might your work affect your own thinking and beliefs?

Would you have to acquire some new attitudes, opinions and beliefs before you could do this job?

Roles and Relationships:

What would you do in this job?

What would your fellow workers do?

What would your patients or clients do?

What sorts of relationships would you have with your fellow workers?

What sorts of relationships would you have with your patients and clients?

What sorts of relationships would you have with the families of your patients or clients?

Causation, Prevention and Treatment of Disease:

What sorts of diseases would you be working with in this career?

Would you be searching for the causes of disease?

Would you be helping people prevent diseases? How?

Would you be detecting diseases? How?

Would you be curing diseases?

Would you be treating people so that they could better cope with diseases that cannot be cured? How?

REVIEW

This review section is divided into five parts: Levels of Analysis, Dimensions of Health, Points of View, Methods of Inquiry and Natural Science. The first four parts review ideas from lessons 1-15 of Biomedical Social Science; the last part reviews the relationship between Social Science and Science. Each part is about half text and half questions. You can read the text of this Review section without reading or working through the questions. However, your teacher may assign some of the questions.

Levels of Analysis:

In Biomedical Social Science you will be studying health and disease on several levels of analysis, from that of the individual to that of the whole human population of the earth. On each level, you will be studying not only people, but also their relationships with their environments--interior and exterior, human and nonhuman, living and nonliving. In the first part of this unit you have studied health-related problems on at least two levels of analysis (maybe more); in the rest of this unit you will investigate other levels, and in later units still others.

The Individual and His Environments: In your work on the story "Emergency," and in your research on health careers, you have concentrated on individuals (the wounded child in the story, and yourself in the work on careers) and their environments.

The Society and Its Environments: In your work on the future of medical technology in America you have concentrated on a whole society and its environments. A society is more than the sum of its individual members. The society has its own organization, its own goals and its own methods, its own problems and its own solutions, its own virtues and its own defects. It may even have its own health and its own diseases. Of course, without the individual members there would be no society. But wherever there are people there is a society; people do things collectively that they could not do (or would not need to do) alone, and these things cannot be completely understood on the individual level of analysis.

The Family, the School and the Community: When you observed people's health behavior and surveyed attitudes toward the nature of health, you may have found that you could generalize from your observations and findings to make statements about your family, your school or your community. Each of these is another level of analysis. On each of these levels there are goals, methods, problems, solutions and so forth. On each level, people interact with one another and with their environments in ways that are unique to that level.

Questions:

1. You are a neighborhood health worker in a large city. Your job is to visit families and identify both immediate health problems and possible future health problems. The majority of families in your neighborhood are of ethnic group A. You have been reliably informed that, as a group, people of ethnic group A tend to be overweight and to suffer nutritional deficiencies because they tend to be poor and to stick to traditional diets high in starches and low in vegetables.

a. When you visit a family of ethnic group A, what health problems will you look for first? Will you look only for these health problems or also for others? Why?

b. Suppose you visit a family of ethnic group B, about which group you have no information. All members of the family appear to be in excellent health. What, if anything, will you conclude about people of ethnic group B as a group? Why?

c. Suppose you visit a family of ethnic group A and find that the family is relatively wealthy and well nourished and no one in the family is overweight. Will this observation make you doubt the information you have heard about ethnic group A as a group? Why, or why not?

2. You are a public health employee. Your immediate task is to find out about the health status of people in a large city who are between the ages of 12 and 16. There are several places you could go to interview these people. For each possibility, describe (1) whether you would get accurate information about these people as a group, and (2) why or why not.

a. You might interview people in this age group who appear for treatment at a large clinic in the city.

b. You might interview people in this age group who are detained in juvenile hall.

c. You might interview every tenth student on the rolls of a private school for girls on the edge of the city.

d. You might interview every tenth student on the rolls of a public school in the center of the city.

Dimensions of Health:

We have invented this phrase to emphasize the fact that health is a complicated business. There is more to it than is likely to meet the eye, or the mind, at a given moment. We sometimes tend to think of health care as a matter of repairing defective machines. In one sense, that is just what it is. But there is more to it than that--always.

Technology: You have done some work on medical technology at the social level of analysis. You could also study medical technology at any other level of analysis, from the individual to the population of the earth. Wherever there is health care or health research, there is medical technology: tools, instruments and methods that people use for particular purposes.

Opinions, Attitudes and Beliefs: You have inquired into some of the beliefs of people in your community about health. Like technology, this "dimension of health" could be studied at any level of analysis. The way people think, and the ideas they believe are true, can cause disease; they can prevent disease; and they can sometimes cure disease.

Roles and Relationships: You have examined roles and relationships in health care on the individual level of analysis, once focusing on an individual patient's case (in the story, "Emergency") and once focusing on an individual who is a potential worker in a health career (yourself). This dimension of health, like the others, could be studied on any level of analysis. In any health care situation there are at least two roles--that of a patient or client and that of a health worker--and at least one relationship, which may or may not be a face-to-face relationship, between the client and the healer. If there are other health workers, assistants or supervisors, there are more roles and many more relationships. If the patient or client has a family, there are still more roles and relationships. The client's neighbors might also be involved; so might his employer; so might the government--and so on.

Causation, Prevention and Treatment of Disease: You have studied the role that you, as a worker in a particular health career, might have in the prevention or treatment of disease, and the relationships that you might have with others if you were in that role. On the

individual level of analysis, this dimension of health includes the "defective machine" aspect of health care. But on other levels of analysis, it includes other things: families can cause, prevent and cure some diseases; so can communities; so can societies.

Questions:

3. Some members of a public hospital's governing board want to establish a fully automated, electronic screening system that can "interview" a patient and determine (from the patient's answers typed into a computer terminal) whether the patient has, or is likely to get, any of several dozen diseases. Other members of the board are vehemently against it. Those who favor the program argue that it will be cheap, fast and thorough, giving checkups that would otherwise require hours and hours of health workers' expensive time. Those who oppose the program argue that a machine cannot possibly understand the patient, that only a trained health worker who sees and talks to the patient can really assess the seriousness of a condition or the likelihood that a patient will get it.

a. Describe this disagreement four ways, each time concentrating on one of the four dimensions of health: (1) technology, (2) roles and relationships, (3) opinions, attitudes and beliefs and (4) causation, prevention, detection and treatment of diseases.

b. Assume that those who favor the new plan are in the majority, and the hospital board votes to implement the plan. What difficulties will the plan encounter from patients? From physicians? Describe the difficulties twice, (1) concentrating on roles and relationships and (2) concentrating on opinions, attitudes and beliefs.

4. A community is experiencing an epidemic of infectious disease among people between the ages of 14 and 20. The county health department opens a free, no-questions-asked clinic in the middle of the affected community and advertises it heavily on local radio and television. After six months it is apparent that very few of the affected young people will come to the clinic, and the epidemic continues unabated.

a. Describe this situation four ways, each time concentrating on one of the four dimensions of health.

b. Describe four ways of stopping the epidemic which might be tried, each way concentrating on one of the four dimensions of the problem.

Points Of View:

In your work on the story, "Emergency," on the future of medical technology and health careers, you have been introduced to seven "points of view" that you can use to understand health, disease and health care situations. These points of view may not all be equally useful in understanding a particular situation. But if you try examining a situation from all seven of these points of view you are likely to understand it better than if you had tried only one or two, or none of them at all.

Five of these points of view represent five of the established social sciences: economics, political science, sociology, cultural anthropology and psychology. The first four of these generally study events on the social level of analysis; the fifth generally sticks to the individual or small-group level of analysis. The sixth point of view corresponds approximately to the academic study of ethics, a branch of philosophy. The seventh point of view represents the study of ecology, which is generally considered a branch of biology and often concentrates on environments in which there are no people, only other organisms.

In this course you will not be restricted to the points of view listed here; you and your fellow students are encouraged to introduce other points of view. And when you are asked to adopt these points of view, you will not be required to think, talk or act exactly like a professional economist, anthropologist or philosopher. Our intention is not to use health as a means of getting you to think from these points of view. Rather, our intention is to help you use these points of view, in whatever ways you find useful, to understand health, disease and health care.

Distribution of Resources: This is one of the chief concerns of economists. It is an important concern for anyone interested in health care, because both research and treatment are expensive, and there are always limitations on the resources that can be used. For example, a society has only so much money, so much talent, so much energy and materials; and it has many other things to do with its resources in addition to preventing and treating disease. Similarly, on any other level of analysis, scarcity of resources can be, and often is, a health problem.

Allocation of Responsibility: Political scientists are often concerned with reponsibility, authority (which is the responsibility to make decisions for a group of people) and power. In health care situations there are always decisions to be made. Who makes the decisions? The answer is a description of a particular allocation of responsibility (and authority, if more than one person is involved). There are decisions to be made at all levels, from the individual deciding on his own health, to the human population of the earth deciding--or trying to decide--on questions of human survival.

Institutions: Sociologists study institutions and the people whose patterns of behavior make up the institutions. We have named five institutions--the economy, the polity, education, the family and religion. There is no list of institutions that all sociologists agree on, but this one will serve. In health care situations, as in all other situations people find themselves in, individuals act in ways that are called "patterns of behavior." Each institution is the sum of many patterns of behavior of may people who have roles and relationships in the institution. These patterns of behavior enable people to live together. They outlast the people: an institution "lives" longer than its individual members. People do not ordinarily think of themselves as acting in one institution or another at a given time; in fact, the institutions are not separate.

That explains why there is no accepted list of institutions: at any moment a person may be acting simultaneously as a member of the economy, the polity, an educational organization, his family and an organized religion; what he does in a given situation might be related to all these institutions.

The economy includes all the patterns of behavior by which a society manages the distribution of its resources.

The polity includes all the patterns set by which the society allocates responsibility and authority.

Education includes all patterns of behaviors by which the society prepares children to take adult roles in the society and trains adults for new roles.

The family includes the patterns of behavior in child-rearing units in the society; within a given society these patterns are more or less uniform, although they are less uniform in a large and complex society such as ours than they are in many societies that are smaller and in which people are less mobile.

Religion includes all patterns of behavior through which the people of a society deal with the supernatural. In a large, complex society religion is not at all uniform, but in other societies it is.

Shared Ideas and Tradition: These are the specialty of the cultural anthropologist. The culture of a people consists of all their shared ways of thinking, believing and doing things, which they pass down from generation to generation. It is in many ways difficult to separate their culture from their institutions, that is, their patterns of behavior, roles and relationships. However, for the purpose of studying health, disease and health care, it is often useful to separate them in the way illustrated below.

On the one hand we have organizations and more or less formal rules governing behavior, and we can break these things down into the five kinds of institutions listed above; this point of view is particularly useful for understanding the ways in which people in a given situation, at a given time go about doing things.

On the other hand, we have individuals who share assumptions, beliefs, convictions about right and wrong and ideas about how to do things; these individuals are almost always ignorant of the ways other cultures have of thinking and doing things; and over a long period of time--say, a lifetime or two or three generations--this way of thinking and doing things changes slowly, in response to innovations from within the group or introductions from outside the group. This point of view is particularly useful for understanding the things that happen when people from one culture--people with one way of thinking and doing things--come into contact with people from another culture, who have a different way of thinking and doing things.

Thinking, Emotions and Motivation: These are among the concerns of psychologists. Many individuals' health problems are disturbances of thinking, emotion and motivation. On the other hand, many health careers put health workers in situations that are emotionally distressing. In addition to these things, the point of view of the

psychologist can often help us understand why people do many of the things they do which endanger their physical health.

Interaction with Environments: Ecology is the study of the interaction among all the living things in a given territory, and the interaction of this population of living things with its nonliving environment. Many human health problems are disorders in the relationship between people and the other living things in their environments (internal and external), and many ways of preventing or treating disease require making adjustments in ecological relationships.

Values: Values are the criteria people use to make decisions. The academic study of values takes place in the philosophical field of ethics. The real use of values takes place wherever there are people, whenever they make decisions. Value conflicts often interfere with decision-making and make people unhappy; the ability to recognize a value conflict and to resolve it consciously (or recognize that one is going to have to live with it) is useful in any walk of life. In health care, where life and death issues arise every day, this skill is especially important. Values are also important on the community and the social levels of analysis. Laws represent decisions made for a community or a society by the people who have the authority to make these decisions. Many of these decisions affect health care. Like all other decisions, these are guided by values. In a democratically governed society, these decisions are supposed to be guided by the values of the citizens. Citizens who are aware of these decisions and the ways in which they are made can influence the laws that control their lives.

Questions:

5. A publicly supported neighborhood health center wants to use some of its money to screen and treat members of the community for heart diesease. A committee of citizens from the community shows up at a meeting of the health center's governing board, demanding that the money be spent on a completely equipped obstetrics and gynecology clinic instead. The governing board consists mostly of physicians, the citizens committee mostly of blue-collar workers and their wives. The health center has enough money to carry out either one of these two programs, but if it tried to split the money between the two programs then neither one of them would be effective.

a. Describe this situation from the point of view of distribution of resources.

b. Describe this situation from the point of view of allocation of responsibility.

c. Describe a change in the allocation of responsibility in this health center which would help to avoid future angry confrontations between a governing board and a citizens' committee.

6. A county health department has established store-front clinics in several neighborhoods of a large city. The clinics have

no waiting rooms and afford very little privacy. They are used primarily for interviews and quick examinations; patients who need further help are referred to other facilities. In one neighborhood, the clinic goes practically unused even though, according to public health officials, that neighborhood has more health problems than others in the city. A person from the neighborhood reports that most of the people who live there come from a certain ethnic group in which both men and women traditionally spend a lot of time socializing, but in separate groups--the men in one place and the women in another --and in which health problems are never discussed with anyone outside the family. Most routine health care used to be provided by traditional healers, who were almost always relatives of their patients. These healers are afraid to practice their healing arts in the city for fear of legal reprisals.

a. Describe this situation from the point of view of institutions and institutional patterns of behavior.

b. Describe this situation from the point of view of conflict between two sets of shared ideas and traditions, each passed down from generation to generation in a particular group.

c. Describe a solution to this problem in which institutional patterns of behavior would be altered so as to eliminate the conflict between two sets of shared ideas and traditions.

7. A neighborhood health worker, whose job is to visit families in the neighborhood and identify possible health problems, discovers in one family a grown son who is obviously severely mentally retarded, who is obviously well loved and cared for by his family, and who has never received professional help during the time his family has lived in the neighborhood. The health worker has been ordered to report all potential health problems (including mental health problems) to her supervisor, and she knows from past experience that, if she reports this man, the family will be plagued by social workers. She is convinced that, if this happens, the family will have no more to do with her or the clinic that employs her, and many of their health needs will go unmet.

a. Describe the neighborhood health worker's situation from the point of view of emotion and motivation.

b. Describe her situation from the point of view of values and value conflict; include the value of obeying rules and the value of getting people in the neighborhood to use the clinic.

c. What would you do in this situation? Why?

8. In a large junior high school in the heart of an urban area, public health officials have found that the children suffer an unusually high incidence of infectious diseases--much higher than the average incidence in urban elementary schools. The school nurse explains that the children are constantly giving one another diseases they have picked up in their own neighborhoods, and that they bring in a lot of diseases because they come to the school from many neighborhoods in the city.

a. Describe this situation from the point of view of institutions and institutional patterns of behavior.

b. Describe this situation from the point of view of interaction with environments (internal and external).

c. Describe a way of changing institutional patterns of behavior and the interaction of the children with their environment so as to reduce the incidence of infectious diseases among the children.

Methods of Inquiry:

In the first part of this unit you have used four important methods of inquiry, or ways of finding out about people and their behavior. In the remainder of the unit you will be introduced to several more methods of inquiry. All these methods are used in the social sciences, and all are useful for solving problems that have to do with health, disease and health care.

Participant Observation: This is the formal name of what you were doing when you observed and recorded the things people did which you thought were related to health. You were studying people's behavior in situations familiar both to them and to you. You did not attempt to alter the situation, but rather attempted to observe it as it would "naturally" be.

Qustionnaire Survey: You have been surveyed and you have surveyed others. A questionnaire survey is a way of asking questions of a large population of people by getting answers from a sample of the population.

Role Playing: You were role-playing when you pretended to be a member of a panel of experts studying the future of medical technology in America. Role playing is useful for finding out how other people feel and understanding why they act the way they do.

Book Research: You have done book research on a health career. This is probably the method of inquiry you are most familiar with. It is useful for finding out facts that other people have dug up themselves, sometimes by other methods of inquiry, and also for finding out what other people think. It is often difficult, in reading books, to judge the accuracy of the statements made about facts, and it is also difficult in some cases to figure out whether you are reading a factual statement or an opinion.

Questions:

9. Describe a way in which participant observation might be used to find out what clients of a neighborhood health center think of the service.

10. Describe a way in which participant observation might be used to find out how health workers in a hospital feel about their supervisors.

11. In these situations, might it be unethical to observe people without notifying them that they are being observed? Why, or why not?

12. In what way(s) would survey research be better than participant observation for finding out what the clients of a neighborhood health center think of the service? In what way(s) would it not be as good?

13. In what way(s) would survey research be better for finding out how health workers in a hospital feel about their supervisors? In what way(s) would it not be as good?

14. In a small clinic, the health workers and their supervisors are having trouble getting along. An outside observer suggests that all these people engage in role-playing in which they trade roles: the supervisors pretend that they are the underlings, and the underlings pretend that they are the supervisors. In this way, says the outside observer, the underlings will find out how hard it is to have responsibility for a lot of other people, and the supervisors will find out how hard it is to be taking orders all the time. In what way(s) might this role-trading (in the absence of real patients, of course) improve the relationships among the clinic's staff? In what way(s) might it make relations worse?

15. A psychiatric social worker is being trained for the job of telling women cancer patients that they must have a breast removed. As part of her training, the social worker is asked to play the role of the patient, while an experienced social worker takes the job of informing the patient. The objective of the role-playing is to help the trainee understand the stresses on the patient. Compare this method of training with two others, also intended to accomplish the same objective: (1) having the trainee interview women who have had a breast removed, and (2) having the trainee interview women who have already been told they must have a breast removed, but have not yet had the operation. In what way(s) would interviews with women who have not yet had the operation be the best method of training? In what way(s) would interviews with women who have already had the operation be the best method of training? In what way(s) would role-playing be the best method? Would some combination of two of these methods, or the combination of all three, be better than any of them alone? What combination? Why would it be better?

Natural Science:

Natural scientists investigate things on levels of analysis which are sometimes different from those described above. Natural scientists may be concerned with the individual or with smaller units as well as larger ones. In Biomedical Science you will operate mainly on the level of the organ system (e.g., the respiratory system), the organ (e.g., the lung), the tissue (e.g., the lining of the bronchial tubes), the cell (e.g., a cell in the blood), the molecule (e.g., the carbon dioxide molecule), the atom (e.g., the carbon atom) and the subatomic particle (e.g., the electron).

Natural scientists concentrate on two of the dimensions of health mentioned above, namely, technology and the causation, prevention, detection and treatment of disease. In Biomedical Science you will spend relatively little time on opinions, attitudes and beliefs or on roles and relationships. These dimensions of health are difficult to study on the levels of analysis and with the methods of inquiry that natural scientists ordinarily work with.

The points of view of natural scientists are also those appropriate to the levels of analysis they operate on. In Biomedical Science you will be seeing things from the point of view of the physicist, the chemist, the geneticist, the anatomist, the physiologist, the pharmacologist and others. One point of view--that of the ecologist, who studies the relationship among living things and between them and their nonliving environment--is common to Biomedical Science and Biomedical Social Science. From this point of view we can examine both some processes that natural scientists concentrate on and some processes that social scientists concentrate one.

The methods of inquiry used in the natural sciences are often different from those used in the social sciences. The reason for the differences is that natural scientists usually study objects, substances and processes that cannot be observed and measured in the same way as the social and individual behavioral processes that social scientists work with. In both Biomedical Science and Biomedical Social Science you will be concerned with the scientific investigation of health and disease, but you will be studying two different sets of processes and using different kinds of scientific inquiry.

Questions:

16. You are a medical social worker, and you have been assigned to investigate and report to a juvenile court judge on the case of eight-year-old Johnny M. Johnny was brought to the attention of authorities by a school nurse, who observed that Johnny seemed perpetually ill. The nurse reported that Johnny spent more school days at home with illnesses than he spent in school, and that when he was in school he was always lethargic and looked sickly. A physician examined Johnny and reported that the boy's main problem was malnutrition; the physician recommended a diet rich in protein, vitamins and minerals. A psychologist interviewed Johnny and his parents, and reported that Johnny's main problem was that he was an unwanted child, born "by accident" and virtually unloved at home; the psychologist recommended that Johnny and his family be offered psychiatric therapy.

The judge has asked you to investigate Johnny's case and make your own recommendation. After talking with Johnny and his parents, you conclude (1) that Johnny is indeed malnourished, though he is decently clothed and housed, (2) that he is indeed unloved, though not abused, (3) that Johnny's parents are also malnourished, (4) that Johnny deeply loves his parents and wants them to love him, (5) that the family could eat better if they changed some of their dietary habits and budgeted their limited income more carefully, and

(6) that Johnny's parents believe they are doing the best they can for the child in their present state of poverty. What would you recommend to the juvenile court judge? Why?

17. Laura J., 47, is an alcoholic who has been hospitalized and "dried out." She has been told by her doctor that she must never drink again; if she resumes drinking, she is likely to die within a year. Laura'a husband has promised to remove all alcohol from the house and stop drinking himself (although he has never been a heavy drinker), so as to make it easier for Laura not to start drinking again. When Laura comes home from the hospital, her younger sister Malvina comes to stay with her for a few weeks, to help her adjust to dry life.

It soon becomes apparent to Malvina that the reason Laura started drinking heavily is that she felt useless. Her children had grown and left home, her husband had virtually no real need for her except as a decoration at parties, and she had never had any interests outside her family.

Malvina explains the situation, as she understands it, to Laura's husband. The two of them then seek an interview with Laura's doctor, explain Malvina's observations to him and ask his advice. The doctor points out that, while psychotherapy might be of some benefit to Laura in this situation, the best people to help Laura are the people she loves--her sister, her husband and her children. He recommends that the family try to figure out a way to help Laura, and that Laura's husband advise him (the doctor) of their progress from time to time.

Laura's sister Malvina has only a few weeks left to stay with Laura before she must return to her own job, children and husband in another state. She is convinced that if something is not done soon her sister will start drinking as soon as she leaves, and she will never see Laura alive again. If you were Laura's husband or her sister Malvina, what would you do? Why?

READING: THE UNSTRUCTURED INTERVIEW

What It Is:

The unstructured interview is a method of inquiry that is used to find out what people know, what they think or how they feel about some particular subject. It is somewhat similar to the questionnaire survey and somewhat similar to participant observation, but it also has some unique features.

This method is commonly used by social scientists--particularly sociologists and cultural anthropologists--when they inquire into the way of life of a group of people who are, to one degree or another, "foreign" to the inquirer. The inquirer typically begins by finding an informant, a person whom he can interview at length and who he thinks will be able to provide him with a lot of information. For example, an anthropologist studying the culture of people in a village in a foreign country tries to find a person who lives in the village, who knows a lot about the ways of the people there and who is willing to talk. A sociologist studying the patterns of behavior of, say, people who use marijuana regularly or people who spend a lot of time in bars (two real examples) seeks an informant who is a member of the group in question and is willing to talk about himself. In most cases, the inquirer does not stop with one informant; he interviews all the informants he can, given the limitations on his time and money.

The inquirer may try to select informants who are a representative sample of some larger population. Whether he does so depends on the nature and size of the population he is trying to learn about. An anthropologist inquiring into the culture of a village in a foreign country may know so little about the people he is dealing with that he does not know what a "representative sample" of those people is. In contrast, a sociologist inquiring into the behaviors and relationships of some group within his own society may be able to describe many characteristics of his "target" population before he begins to interview, and may therefore feel confident that he can select a representative sample of that population.

Getting Information:

The inquirer begins not only with an informant (or several informants), but also with some idea of what it is that he wants to know about. From this idea he produces, essentially, two lists of questions: general questions that he can ask of each informant, to get the informant started talking about the kinds of things the inquirer wants to know about; and follow-up, or "probing," questions that he can use to encourage the informant to keep talking about whatever he is talking about.

These two lists of questions illustrate the difference between this method of inquiry and the other two methods mentioned above. An inquirer using participant observation also begins with an idea of what he wants to know about, but he doesn't ask any questions; he just observes behavior and records what he observes. On the other hand, an inquirer using a questionnaire survey cannot use

probing questions. Another difference between the unstructured interview and the questionnaire survey is that a questionnaire usually includes closed questions, that is, questions followed by lists of possible answers from which respondents are asked to choose (sometimes, always, never; agree, neutral, disagree; etc.). The questions used in unstructured interviews are always open; the informant is always allowed to answer in his own terms.

As you can see, an "unstructured interview" is not really unstuctured. Simply by asking questions, the inquirer structures the interview, that is, imposes order on it, makes it predictable. However, this kind of interview is always less structured--less orderly, less predictable--than an interview in which a questionnaire is used.

One of the most difficult parts of using unstructured interviews is being prepared for the unexpected. The interviewer may have no idea at all what the informant will say. When the informant says it --whatever it is--then the interviewer has to be ready to follow up on it. But while he is encouraging the informant to talk about the things the inquirer wants to hear about, the inquirer must be very careful not to impose his own answers, his own explanations or his own values.

For example, consider an anthropologist who is trying to learn about indigenous (native) healers in a South American jungle village. The inquirer may have begun with a list of general questions designed to get informants started talking about things he wants to know: whether the healers are specialists or generalists, whether they are males or females or both, how they are chosen and trained for this work, whether they contact the supernatural world as part of the healing process, whether they use drugs in healing, whether they are paid and if so how much and by whom, and so on. Suppose an informant, answering a general question about drugs, says that in a serious case a healer might prepare a vision-inducing drug and take it himself, then, in his vision, communicate with spirits to find out what is causing the patient's disease. The inquirer might think this an ineffective way to diagnose diseases. But if he says what he thinks, he will probably shut off the flow of information from his informant. If he wants to find out more about this method of diagnosis (what is considered a "serious case," what drug is used, who the spirits are, what sorts of causes of disease the spirits identify, etc.), then he will have to use probing questions that are neutral, questions that will encourage the informant to say what he thinks.

Using the Information:

What does the inquirer do with the information he gets? First, he has to record it. A social scientist using this method may take notes by hand, tape record his interviews or both. He does not usually try to organize the information until after he has finished all his interviews. Because the interviews are relatively unstructured, the inquirer often has little or no idea what sort of information he is gathering until after he has gathered it.

After all the information is in, the inquirer may try to organize it in either of two ways: according to the kinds of questions he asked, or according to the kinds of answers he got. The first way is obvious: the inquirer assembles all the informants' answers to one question and generalizes from them, then assembles all the answers to another question and generalizes from them, and so on.

The second way is less obvious: the inquirer seeks order in the information he has received, rather than imposing his own order on the information. For example, the anthropologist in the example above may have found that, in answer to all his questions about indigenous healers, informants have always talked about disease as a result of conflict between living people and the spirits of dead people, and have always talked about healers as peacemakers who tried to make diseases go away by settling these conflicts. The anthropologist might organize the information he has received into information about who the spirits are, about the kinds of things the living people and the spirits have conflict over, about which kinds of diseases are caused by which kinds of conflict, about which methods healers use to settle which kinds of conflict and so on. This way of organizing the information might never have occurred to the anthropologist before he conducted his interviews; if he uses it, he has found order in the informants' answers and used that order, instead of imposing his own order on the answers.

The Unstructured Interview and Other Methods of Inquiry:

Why use the unstructured interview instead of simple observation? Simple observation is not only completely unstructured but completely undirected. The observer can only take what he gets. If he gets very little talk, he may have difficulty figuring out what people think or how they feel. And even if he does get a lot of talk, it may not be about the subject he wants to know about. If one wants to know about people's thoughts and feelings, and especially if one wants thoughts and feelings on a particular subject, then the unstructured interview may be better than simple observation.

Why use the unstructured interview and not a questionnaire? A questionnaire is very useful if the inquirer knows in advance exactly what it is that he wants people to tell him about, and can put his questions in terms he is sure all respondents will understand. A questionnaire is very useful for getting people's responses (strongly agree, agree, neutral, etc.) to a particular idea or for getting detailed information about a particular aspect of people's behavior (number of cigarets smoked per day, amount of money spent on health care each year, etc.). But the unstructured interview is much more useful if the inquirer has only a general idea what he wants to know about, or has only a general idea (or no idea at all) what kinds of answers he is going to get. The unstructured interview is often used in situations where the inquirer knows little about the informants or their culture. In such situations the inquirer knows so little about the people he is talking to that he cannot ask specific questions and give lists of possible answers. He can only use general questions, and then use probing questions to find out in more detail what his informants think, feel or know.

DATA ON CORONARY HEART DISEASE

Note: Below is a brief explanation of the nature and some possible causes of coronary heart disease (CHD). You will be learning more about CHD in a later unit of Biomedical Science. We are introducing it in this unit of Biomedical Social Science because it is one of many physical disorders which some researchers believe may be partly caused by emotional, mental or social processes.

What Is CHD?

Coronary Heart Disease (CHD) is a general term for several conditions, but all of them include an insufficient supply of blood to the heart muscle. Blood is brought to the heart muscle by two arteries called the coronary arteries. These arteries are quite short, since they originate at the top of the heart and then wrap around its outside surface, one supplying blood to the right side of the heart and one supplying blood to the left side. (The word "coronary" comes from the Latin word corona, meaning "crown"; the arteries encircle the heart something like a crown.)

The insufficient supply of blood in CHD is the result of poor blood flow through the coronary arteries. Poor blood flow may have a variety of causes, but it is most commonly caused by deposits of substances in the inside walls of the arteries. These deposits narrow the inside diameter of the arteries. They also cause the inner surface of the arteries to become hard and rough instead of flexible and smooth.

These deposits in the lining of the arteries may restrict or stop the flow of blood in several ways. They may simply make the arteries so narrow that little or no blood gets through. This is the most common manifestation of CHD; it results in chest pain during physical exertion. Deposits may also cause blood clots to form at narrow places in the arteries, and these clots can further restrict or suddenly stop the flow of blood. This sudden stoppage of the flow of blood is the common "heart attack," and it may result in sudden death.

CHD kills more Americans than anything else. In fact, half of all American men over 35 die of CHD. It kills a larger proportion of Americans than of most other national groups. Among Americans it kills more men than women and a higher proportion of white people than of black people.

What Causes CHD?

Statistical studies have associated a number of biological, chemical and physical factors with the occurence of CHD. Among these are saturated fats, cholesterol and refined sugars in the diet, obesity (overweight), high blood pressure, cigaret smoking, lack of exercise, and genetic inheritance. These studies have generally shown that people who have any one of these factors have a higher incidence of

CHD than people who have none of them, and that people who have any combination of two or more of them (e.g., people who not only smoke cigarets but also get very little exercise) have a higher incidence than people who have only one of them (e.g., people who smoke cigarets but do not have any of the other factors).

In recent decades, several researchers have suggested that there may be psychological and social factors associated with CHD, in addition to the chemical, biological and physical factors mentioned above. One group of researchers* has studied the association of CHD with a particular behavior pattern, which the researchers call "Type A behavior." They identified the behavior pattern by studying the behavior of people who had already had heart attacks. This behavior pattern is rather complex, but the researchers believe its most important components are (1) a chronic sense of time urgency (always being in a hurry, always feeling that there is too little time to do whatever has to be done) and (2) chronic "competetive overdrive" (always struggling to achieve more and more in the time available).

A Study of Behavior and CHD:

In 1960, these researchers began studying the medical and personal histories of 3,524 healthy American men, aged 39 to 59 years. The objective of the study was to determine whether CHD could be predicted by any of several characteristics, including the Type A behavior pattern. The table of data presented on the next page shows some of the things the researchers learned about these men at the beginning of their study. One thing they learned was that 113 of the men already had CHD, many of them without knowing it. The table compares the characteristics of those who already had CHD at the beginning of the study and those who did not (in the two right-hand columns). It also makes the same comparison in two age groups: men aged 39-49 years (in the two left-hand columns) and men aged 50-59 years (in the two middle columns).

Note that the bottom section of the table is titled, "'Predictive' classification of future coronary-proneness, %." This part of the table shows what percentage of the men in each of the various groups were "predicted" to be "coronary-prone" (i.e., likely to have a heart attack) in each of two ways. One "Predictive" measure was based on the amounts of lipoproteins (particles in the blood which carry cholesterol, among other things, through the body) in the subjects' blood. The other measure was based on the presence of the Type A behavior pattern.

For an indication of how well these "predictions" worked out, look first at the bottom two numbers in the far right-hand column. These show that, of all the men in the study who already had CHD, the behavior-pattern method "predicted" that 71% of them would have CHD and that 29% of them would not. Obviously, since all these men actually

*Ray H. Rosenman, Meyer Friedman, et al., "A Predictive Study of Coronary Heart Disease," Journal of the American Medical Association, Vol. 189, No. 1, July 6, 1964, pp. 15-22

CHD	Ages 39-49 Years		Ages 50-59 Years		Total Subjects	
	Absent	Present	Absent	Present	Absent	Present
No. of subjects	2,416	60	995	53	3,411	113
Mean age (yr)	43	44	54	54	46	49
Mean height (cm)	178	178	177	176	178	177
Mean weight (kg)	77	79	77	77	77	78
Type of occupation,%						
Sales and publicity	8	17	7	15	8	16
Personnel hiring, training	4	5	4	2	4	4
Supervisory	16	12	21	15	17	13
Data handling	29	22	30	17	29	20
Scientific	5	5	5	6	4	5
Techniques	7	13	7	6	7	10
Engineers	22	17	18	28	21	22
Production (laborers)	9	10	8	6	9	8
Maintenance (laborers)	1	0	1	6	1	3
Level of occupational responsibility,%						
Top level	4	12	9	13	6	12
Second level	85	82	77	77	83	80
None	11	7	14	10	12	8
Annual income,%						
Under $10,000	47	30	41	40	45	35
$10,000-$25,000	52	67	53	55	52	61
Over $25,000	2	3	6	6	3	4
Marital status,%						
Single	4	0	2	0	3	0
Married	88	88	86	89	87	89
Divorced-single	2	2	2	4	2	3
Divorced-remarried	6	10	10	8	7	9
Positive parental history of CHD,%	17	20	18	21	17	20
Physical activity at work,%						
Light	85	90	81	87	84	89
Moderate	15	10	19	13	17	12
Smoking habits,%						
Never smoked	24	13	19	13	22	13
Formerly smoked	16	23	21	25	17	24
Current cigaret smoker	48	57	48	55	48	56
Av. no. cigarets per day	24	26	24	21	24	24
Positive history of high blood pressure,%	8	8	11	21	8	14
"Predictive" classifications of future coronary-proneness,%						
Lipoprotein basis						
Total coronary-prone	30	45	35	45	32	45
Total non-coronary prone	70	55	65	55	69	55
Behavior pattern basis						
Total coronary-prone	50	68	58	74	52	71
Total non-coronary-prone	51	32	42	26	48	29

Note: Percentages in some categories do not add to 100% because of rounding errors.

already had CHD at the time, this method was wrong in 29% of the cases. However, it was better than the lipoprotein method of "prediction," as you can see by looking at the next two numbers up in the same column. According to these numbers, the lipoprotein method "predicted" that only 45% of these men would have CHD and that 55% of them would not--whereas all of them, in fact, had CHD already. (Of course, since some of these men knew they had CHD, they may have been on diets low in cholesterol, which would affect the "prediction.")

The researchers followed these subjects for ten years, keeping track of which ones had CHD and which ones didn't. After that time they reported* that almost three times as many subjects who were Type A at the beginning of the study as men who were Type B (the opposite of Type A--not hurried, not excessively competitive) eventually came down with CHD during the ten-year observation period. It is important to understand what this finding means--and what it doesn't mean. It does mean that, among the group of men studied, three times as many Type A's as Type B's got CHD in a ten-year period. One thing it doesn't necessarily mean is that a Type A individual is three times as likely to have CHD as a Type B individual. Another thing it doesn't necessarily mean is that among all men, three times as many Type A's as Type B's will get CHD--for the group of men studied was not necessarily a representative sample of "all men."

A third thing that the researchers' finding doesn't necessarily mean is that Type A Behavior causes heart disease. A statistical association, no matter how close, does not prove that there is a causal (cause-and-effect) relationship. When there is a close statistical association between two events x and y, there are always at least four possibilities: x is causing y, directly or indirectly; or y is causing x, directly or indirectly; or some other event z is causing both x and y, directly or indirectly; or x and y have no causal relationship, but are associated only by chance. In the case of CHD it is particularly difficult to sort out what is causing what, because so many things are statistically associated with the disease.

If numbers don't show what causes CHD, why bother with them? The reason is that numbers may suggest what causes CHD, and these suggestions may lead to further research. For example, the experimenters in this case have taken their results as a suggestion that Type A behavior might, indeed, be one contributing cause--or even the main contributing cause--of CHD. Starting from that suggestion, they have carried out further research** in the attempt to learn whether chronic time urgency and excessive competiveness might contribute to CHD and, if so, how.

The problems below are designed to give you some experience at looking for suggestions in numbers. Using the table in this reading, you can compare several characteristics of men with CHD and men without CHD, and think about whether any of the differences you find might

*Meyer Friedman and Ray Rosenman, Type A Behavior and Your Heart, Fawcett Publications, 1975, p. 80.

**Friedman and Rosenman, chapter 6.

somehow be related to the likelihood that a person will get CHD.

Problems:

Each of the first seven problems below asks you to examine the data on a single characteristic represented in the table, such as "Type of occupation" or "Annual income." Except for the characteristics "Positive parental history of CHD" and "Positive history of high blood pressure," each characteristic lists several possibilities. For example, nine occupations are listed under "Type of occupation" and three income levels are listed under "Annual income." When working on a particular characteristic, please do each of the following things. Study the data on three groups separately: (1) first men aged 39-49, (2) then men aged 50-59, (3) then all the subjects; within each group, compare men with CHD and men without CHD, examining one row of data at a time. (4) Describe any differences between men with CHD and men without CHD on that particular characteristic, then write down whether you think these differences might have anything at all to do with causing CHD and why you think so (or don't think so).

Sample Problem:

Compare men with CHD and men without CHD on the characteristic, "Physical activity at work.'

Solution:

1. Men aged 39-49: A higher percentage of those with CHD than of those without CHD engage in only light physical activity (90% of those with CHD, 85% of those without). A lower percentage of those with CHD than of those without CHD engage in moderate physical activity (10% of those with CHD, 15% of those without).

2. Men aged 50-59: A higher percentage of those with CHD engage in only light physical activity (87% as compared to 81%). A lower percentage of those with CHD engage in moderate physical activity (13% as compared to 19%).

3. All subjects: A higher percentage of those with CHD engage in only light physical activity (89% compared to 84%). A lower percentage of those with CHD engage in moderate physical activity (12% compared to 17%).

Note: These comparisons can be expressed in a table, as shown below.

	39-49	50-59	all
Physical activity at work:			
Light	more	more	more
Moderate	fewer	fewer	fewer

If you use a table, write down what the words mean. For example, in this table, "more" means that a higher percentage of men with CHD than of men without CHD fit the category.

4. Possible relationship to CHD: Among the men studied, more men with CHD engage in only light physical activity and fewer engage in moderate physical activity. Moderate physical activity might help prevent CHD, perhaps by helping to keep the heart muscle in shape.

1. Compare men with CHD and men without CHD on "Types of occupation."

2. Compare men with CHD and men without CHD on "Level of occupational responsibility."

3. Compare men with CHD and men without CHD on "Annual income."

4. Compare men with CHD and men without CHD on "Marital status."

5. Compare men with CHD and men without CHD on "Positive parental history of CHD."

6. Compare men with CHD and men without CHD on "Smoking habits."

7. Compare men with CHD and men without CHD on "Positive history of high blood pressure."

8. Before age 50, CHD kills more than three times as many men as women in this country. Considering all the possible causes of CHD you have read about, what are some possible explanations for the fact that men are more likely than women to get CHD?

9. CHD kills a higher percentage of people in the U.S. than in almost any other nation in the world. Considering all the possible causes of CHD you have read about, what are some possible explanations for this fact?

CHD AS A SOCIAL DISEASE

This is a two-part assignment. The first part calls for a short writing. The second part calls for some thinking and note-taking; your notes and thoughts will be used in the next lesson.

Data Manipulation as a Method of Inquiry:

In your work on CHD you have been using data that were gathered and organized by others. This is a method of inquiry that is frequently used both in and outside of the social sciences. People often rearrange other people's data for the purpose of finding out things other than those things the original researchers were trying to learn. This method has certain advantages, and it has certain

disadvantages. List all the advantages and disadvantages you can think of. As a way of getting started, try comparing this method with two other methods of inquiry you have used: survey research, in which you gathered your own data and then manipulated them, and book research, in which you used other people's information but did not necessarily use numerical information.

Note: In working with data on CHD you have been unable to use the most important methods of data manipulation, which are the methods of statistics. However, in these lessons and in your work with the data your class gathered with your own questionnaire, you have had some experience in comparing data, trying to derive ideas from the comparisons you make, and trying to figure out whether and how far you can generalize your ideas from the subjects who were studied to larger groups. You are not being asked to compare statistical methods with other methods of inquiry, but you are being asked to compare the experiences you have had using numbers with some of the other learning experiences you have had in this course.

Thinking about CHD:

CHD is a major killer of Americans. It is a major health problem in this country on any level of analysis, from that of the individual to that of the society. The data you have examined show that there may be some psychological and social causes of CHD, in addition to some more physical causes, such as bad diet, smoking and lack of exercise. In fact, even the possible "physical" causes have their psychological and social aspects, for people's eating, smoking and exercising habits may be related to their personalities or their social situations or both.

For the purposes of this assignment, concentrate on the possible causes of CHD which are related to the personality of the victim or to the victim's social situation or both. You might wish to assume, for the sake of inquiry, that Type A behavior is a contributing cause of CHD, and that a social situation that encourages Type A behavior is therefore bad for at least some people's health. Please note, however, that this is only an assumption, not an established fact.

To begin with, pick one level of analysis for thinking about CHD. Choose one of the following possibilities.

Individual: Think about ways of preventing CHD in individual persons.

Family: Think about ways of altering family roles and relationships (relationships between males and females or between adults and children) so as to reduce the likelihood that any family members will get CHD.

Community: Think about a community health program that might be designed to reduce the number of people in the community who get CHD.

State or Society: Think about a state or federal program

that might be designed to reduce the number of citizens who get CHD.

When you have decided which level of analysis is most interesting to you, begin working on the problem you have set yourself by considering, one at a time, all of the seven points of view that have been introduced in previous lessons. Under each point of view, jot down any ideas that occur to you which might be helpful in solving the health problem you are working on.

Distribution of Resources: It is much cheaper to prevent CHD than to treat it after it has appeared. Treatment involves not only the use of drugs but also expensive operations and the use of sophisticated technology such as heart pacemakers. People who have CHD are also less likely to be productive workers in the economy.

Allocation of Responsibility: Does government have a responsibility to prevent people from behaving in ways that might lead to CHD? Does government have a responsibility to inform people about the risk of CHD, to educate them about possible "high-risk" and "low-risk" ways of life? Does a citizen have the right to behave in a way that might endanger his health, if he does not endanger anyone else's health?

Institutions: Type A behavior (hurrying and excessive competitiveness) may be a form of institutionalized behavior pattern encouraged by many organizations in American society. Is the competitive social system a cause of CHD? Should behavior patterns encouraged by organizations be changed to make them less hazardous to people's health? Can people compete and work hard enough to make the system work without endangering their health in the process?

Shared Ideas and Traditions: Americans tend to place physical health and disease in one category and mental or emotional health and disease in a separate category. The data you have seen suggest that CHD, a lethal physical disease, may be at least partly caused by mental and emotional, as well as social, processes. Is the traditional separation of mental and physical health partly responsible for the prevalence of CHD in America? Might it be possible to change this traditional way of thinking? Do government officials, health professionals, teachers or others have the right to try to change traditional ideas in the attempt to solve a widespread health problem?

Thinking, Emotions and Motivation: What methods might be used (on the level of analysis you are thinking about) to change the way people think about CHD? What methods might be used to motivate people to avoid "high-risk" behavior and social situations? Are these methods ethical?

Values: Under what conditions is it ethical to intervene in the affairs of others? To what extent may the intervention go without becoming unethical? Is it all right to give people information they don't want to hear in the attempt to protect their health? Is it all right to prevent them from doing things they want to do in the attempt to protect their health? Does an individual have the right to kill himself (slowly or quickly) if he wants to? Does an individual have

an obligation to keep himself healthy for the sake of his family? His community? His society?

Interaction with Environments: What sort of environment (on the level of analysis you are thinking about) is a "high-risk" environment for CHD? What sort of environment is a "low-risk" environment? How could high-risk environments (on this level of analysis) be changed into low-risk environments?

READING: FIELD MANIPULATION AND OBSERVATION

First Experiment:

In the early 1970's, a researcher* designed an experiment to find out something about how psychiatrists decide who is sane and who is not. The design was to have normal people--people who had never had symptoms of serious psychiatric disorders--admitted to psychiatric hospitals, and see whether these "pseudopatients" would be discovered to be sane.

Eight sane people took part. Some got into more than one hospital so there were a total of twelve admissions. The eight pseudopatients included three psychologists, a pediatrician, a psychiatrist, a painter and a housewife. Three of them were women, five were men. The twelve hospitals were located in five different states on the East and West coasts. Some were "old and shabby," some were new; some were understaffed, some were not. One was a private hospital, but all the others were supported by various kinds of public funds.

The pseudopatients used fictitious names, and those who were in mental health professions gave fictitious jobs. The hospital staffs did not know anything about the experiment, so the pseudopatients had to get in by giving fictitious symptoms. All used the same symptom: they said they had heard voices saying things like "empty," "hollow" and "thud." The voices were unfamiliar. Women pseudopatients heard female voices, men heard male voices.

This symptom was chosen because it is similar to "existential symptoms," which people are alleged to have when they perceive that their lives are meaningless; these people are supposedly saying, through their hallucinations, "My life is empty and hollow." This condition is not a "recognized" or "standard" disorder; at the time of this experiment there were no reports on it in psychiatric texts or journals. The choice of this symptom therefore left the staffs of the hospitals free to decide for themselves whether the pseudopatients were sane or not.

Once the pseudopatient was in the hospital, he ceased lying. He related all past events in his life as they had actually occurred (changing only his name and, in the cases noted, profession). When asked about his symptoms, he said he had not experienced them again.

*D. L. Rosenhan, "On Being Sane in Insane Places," Science, Vol. 179, January, 1973, pp. 250-58.

All pseudopatients acted normally; they did not pretend any "crazy" behavior. The only thing abnormal about their behavior was that, right at first, they were all very nervous because they were afraid they would get caught. However, none of them got caught.

Pseudopatients talked to other patients and to staff members as they would ordinarily talk; they often made attempts to engage others in conversation, largely because there is little else to do in a mental hospital. The pseudopatients spent much of their time taking notes on their observations of the hospital. Three of the pseudopatients' records show that their nurses took this writing as an aspect of their mental illness; the sentence, "Patient engages in writing behavior," appeared as a daily observation in the record of one pseudopatient.

It was quite common for other patients to detect the pseudopatients as frauds. Accurate counts were kept on the first three cases, when 35 out of a total of 118 other patients accused the pseudopatients of sanity. One patient charged, correctly, that the pseudopatient was "checking up on the hospital." The pseudopatients assured these patients that they had been sick before they entered the hospital, but some patients refused to believe it.

In 11 of the 12 cases, the pseudopatients were diagnosed as schizophrenic; the twelfth pseudopatient was diagnosed as a manic-depressive psychotic. (Both schizophrenia and manic-depressive psychosis are serious disorders in which the prospect of recovery is uncertain.) All pseudopatients had been told they would have to get out on their own, by convincing the hospital staffs that they were all right. All of them did get out on their own, after stays ranging in length from 7 to 52 days and averaging 19 days. The 11 "schizophrenic" pseudopatients were all released with a diagnosis of schizophrenia "in remission," meaning that in the eyes of the hospitals they were still schizophrenics, but their disorders were not bothering them at the time.

Second Experiment:

The same researchers conducted a different experiment to find out whether members of mental hospital staffs could be induced to make the opposite error: to judge a person sane who actually thought he might be insane.

After describing the first experiment, the researchers told the staff of a mental hospital that, at some time during the following three months, one or more pseudopatients would come and request admission to the hospital. Each staff member was asked to rate each patient who came in on a 10-point scale, with a rating of one or two indicating high confidence that the patient actually was not insane, but was a pseudopatient.

Ratings were turned in on 193 patients. Of these, 41 (more than 20%) were judged, with high confidence, to be sane by at least one

member of the staff; 23 were considered suspect by at least one psychiatrist; and 19 were suspected by one psychiatrist and one other staff member. (No pseudopatients were sent.)

The Method of Inquiry:

In both these experiments the researcher used what is called field manipulation and observation, which might also be called the "Candid Camera method." People working on the experiment went into real social situations ("the field") and did artificial things ("manipulation"), then watched to see what the people in those social situations would do ("observation").

This method of inquiry is similar to simple observation, in that the inquirer did not ask any questions. However, the inquirers did get people's responses to a particular thing (the "manipulation"), and in that sense this method is more like the unstructured interview.

In the first experiment, the level of analysis was the individual mental hospital. However, several hospitals were studied, and if these hospitals were representative of American mental hospitals then the results and conclusions might be generalized to a higher level of analysis--namely, to the level of American mental hospitals in general. In the second experiment, only one hospital was studied, so it would be unwise to generalize from the results. The hospital studied might have been highly unusual.

Reports, Assumptions and Perceptions:

The results of these two experiments demonstrate two serious problems that can arise when one inquires into psychological and social processes. One problem is that the inquirer's assumptions about these processes can influence his perceptions of them. The other is that the inquirer often must rely on the verbal reports of the persons whose behavior he is trying to observe.

A. The Importance of Assumptions: Consider the situation of a psychiatrist interviewing one of the pseudopatients in the first experiment. Once the pseudopatient has described his "symptoms," the psychiatrist can only assume that the pseudopatient is somehow mentally or emotionally abnormal. Once the pseudopatient has been admitted to the hospital, everyone else on the staff makes the same assumption. From that point on, no matter what the pseudopatient says or does, the hospital staff members perceive his behavior as abnormal. This fact is vividly illustrated by the case of the nurse who consistently wrote, "Patient engages in writing behavior," in one pseudopatient's record. In virtually any other situation, a person taking notes would not be perceived as exhibiting insane behavior, though he might be thought odd or unusual. But in a situation where everyone assumes the person is insane, this simple behavior is automatically assumed to be an indication of illness.

Similarly, in the second experiment, people's assumptions influenced their perceptions. In that experiment, the psychiatrists and others who interviewed new patients assumed that each new patient might be a pseudopatient. Then, presumably, if a patient came in who did not act abnormal but only said he had had unusual experiences,

these staff members perceived that patient as normal--even though the patient was a real patient, and really was concerned enough about his unusual experience to come to a mental hospital for help.

How can this sort of mistake be avoided? One way would be to have no assumptions about the situation one is in. But that is impossible. In any social situation a person gets into, he must make assumptions or he will be paralyzed by uncertainty. For the person who is trying to inquire into psychological and social processes, however, it is possible to make some precautions--namely, to make as few assumptions as possible, to be aware of all the assumptions one makes, and to think carefully about the ways in which one's assumptions might be influencing one's perceptions of the processes one is observing.

The other way one might try to avoid this mistake is to be sure one has something more than verbal reports to go on. This is the subject of the next section.

B. The Importance of Verbal Reports: Consider, again, the situation of the psychiatrist interviewing a pseudopatient in the first experiment. In making his judgement about the mental and emotional state of the pseudopatient, the psychiatrist had two kinds of information to rely on: the pseudopatient's verbal report of his (fictitious) unusual experiences, and the pseudopatient's observable behavior at the time of the interview. If the pseudopatient was good at playing his role, then we can assume that his observable behavior (posture, gestures, tone of voice, etc.) indicated that he was sane. But his verbal reports indicated that he was not. The psychiatrist assumed that the pseudopatient was telling the truth, so he discounted the observable behavior and believed the verbal report. His judgement was, therefore, that the pseudopatient was insane.

Medical professionals diagnosing patients usually have more to go on than verbal reports and observable behavior, although these are always an important part of the information on which a diagnosis is based. There is usually something else observable that the health professional can go on: a swelling, a discoloration, an abnormal physiological process (high blood pressure, fast pulse, lack of consciousness, etc.) an abnormal chemical state (high blood sugar, lack of an enzyme, high blood acidity, etc.) or, in the most obvious cases, a physical injury.

When a person is studying psychological and social processes, however, these kinds of information are often either missing or irrelevant. There is nothing to go on except verbal reports and observable behavior. Consider the methods of inquiry you have used in this course so far: participant observation, the questionnaire survey, role-playing, book research, the unstructured interview and data manipulation. In using all these methods you had to rely to some extent on verbal (written or spoken) information. Any method of inquiry that relies on verbal reports for most or all of its information contains an element of uncertainty. The people giving the reports may be lying; they may be "stretching the truth" to make themselves look better; or they may be passing on misinformation that they themselves believe.

READING: AIR POLLUTION

Air pollution is a permanent part of the environment for many Americans. Much of it is invisible, tasteless and odorless--including some of the most hazardous kinds. Most people seldom think about it. It can cause diseases of the respiratory system, including bronchitis and emphysema. For people who already have chronic respiratory diseases, a few days' exposure to unusually high levels of air pollution can be fatal.

Levels of Analysis:

Air pollution can be a health problem at any level of analysis. For the individual who has a chronic respiratory disease it is a lethal threat; for the individual who does not have such a disease and does not want to get one, it is a continuous menace.

For the family with an adult member who has a chronic respiratory disease, or for the family that wants to protect its children's health, air pollution can force a move to a different neighborhood, a different city or even a different state. By aggravating disease, it can bring about huge medical bills.

For the community, air pollution is always a problem to one degree or another. Most air pollution in American urban areas is not caused by factories, power plants and steel mills. Most of it is caused by automobiles and trucks. Every American community has automobiles. Therefore every American community has air pollution. Some communities also have industrial plants; they have even more pollution.

For state and national economies and governments, air pollution is only one of many problems, and it is seldom the most urgent one. Air pollution is hazardous to the health of citizens; it is also unavoidable as long as the citizens have cars with the kinds of engines now in use. Air pollution from industrial plants is, in some places, more deadly than the pollution from cars; but is is a by-product of industrial plants that hire the workers and keep the local economies going in just those places. Air pollution never stops at state lines, or even at international boundaries. Pollution generated in one place is carried by wind currents to other places, which may have no legal jurisdiction over the source of the pollution.

Points of View:

Depending on one's point of view, air pollution takes on many aspects. From the point of view of chemistry, air pollution is often a process of airborne chemical transformation in which pollutants from one source mix and combine with pollutants from another source and with other components of air, and receive the necessary energy from the sun to create new air pollutants worse than any of the original pollutants that people have put into the air. From the point of view of meteorology, air pollution is something that is unavoidable in valleys and other hollows in the earth, especially on certain warm

days in the autumn when the layers of air in these hollows take on a peculiar configuration called a temperature inversion. This occurs when a layer of cool, polluted air gets trapped next to the ground while the air above it is warmed by energy from the sun.

From the point of view of human interaction with environments, temperature inversions are an important phenomenon. They occur in the hollows in the surface of the earth, which is also where the water collects. And where the water collects--in bays, lakes, rivers and streams and at the mouths of rivers--there are found the greatest concentrations of human beings, the greatest concentrations of automobiles and trucks, the greatest concentrations of industrial plants and the greatest concentrations of pollutants, just waiting to be trapped in a temperaute inversion.

Consider the closely related point of view of the distribution of resources. Why are there so many people and industrial plants in these hollows? Because water is needed for most industrial processes, and also for the home use of the people who work in the plants. Why are there industrial plants? That is the way the economy in this society produces its goods. Why so many automobiles and trucks? That is the way people in this society choose to transport themselves and their goods from place to place. Why do the industrial plants and automobile manufacturers not control all this air pollution? Often because it is economically impossible to do so.

Consider, then, the allocation of responsibility. If people will not stop driving, if industry will not prevent pollution, should there be a law? Possibly so--but at what level of government? Local government has limited power, state government has limited money and the federal government must balance the needs of the environment with the needs of the economy. Besides, there is the argument that the government has no business interfering with business and with people's private lives to the extent it would have to in order to reduce pollution significantly. On the other hand, it seems that citizens must have a right to breathe clean air. Do they? Does government have an obligation to protect such a right?

From another point of view, consider institutions and institutional patterns of behavior. A pessimistic observer might say that this society has been carefully organized to produce the greatest amounts of the worst possible kinds of air pollution over the most vulnerable parts of the landscape. Obviously that is not true--the society has not been organized for that purpose--yet it appears equally true that the society has not been carefully organized to prevent pollution, to preserve the environment or to protect the health of citizens. To what extent might air pollution be caused by the goals of institutional organizations or by the patterns of behavior that people follow in those organizations? Is it possible, theoretically speaking, to alter institutions and institutional patterns of behavior in such a way as to reduce air pollution? If it is theoretically possible, is it practically possible? Can it really be done? Has it been tried? If so, has it worked?

Perhaps shared ideas and traditions also play a role in air pollution. The American nation has spent the first two centuries of its existence subduing the earth, conquering the wild, harnessing the forces of nature and putting them to human uses. Many Americans are proud that their heritage includes vast stretches of trackless wilderness, yet many of us have never seen any of it. How do Americans feel about untamed nature? Do they respect it? Do they fear it? Is there a traditional American way of thinking about the nonhuman, "natural" world? If there is, does it affect the way Americans think about pollution? Could it be changed? Should it be changed?

Consider the point of view of values. Does the individual have a moral right to pollute his environment? Does he have a right to pollute other people's environments too? Does the society have a right to interfere in individuals' lives to prevent their polluting the environment for others? Does the society have a moral obligation to preserve the environment for future generations?

Finally, consider the point of view of thinking, emotion and motivation. If one believes it is desirable to reduce air pollution, how could one go about reducing it? How could individuals be motivated to change their ways of living? How could government officials be motivated to change laws? Is there something one could tell people, an educational experience one could give them, that might cause them to change the way they think and feel about pollution, the environment and their health?

READING: A SIMULATION OF HEALTH AND ENVIRONMENT

This reading describes a simulation that you and your classmates will participate in during your next class meeting. The simulation is like a game, with "players," objectives and rules. But it is more than a game, because it is designed to simulate, or imitate, a real social process. This particular simulation is designed to imitate the interactions between families and their environments, particularly the way a family finds a healthful environment.

This simulation is designed for a group of five participants. Each participant represents one family. His objective is to get that family to the environment that will be best for the health of the family. Each family has its own peculiar health problems. All families start the simulation in the same place, but some can move faster than others because they have more money. All families may encounter "chance" events that might help them get where they are going or hold them back.

The Families:

The Adams Family: Mr. Adams, the breadwinner in this family, has suffered a head injury that paralyzed his left leg and left arm. He can walk only with great difficulty, using braces and a cane or crutch, and prefers to travel by wheelchair. He is self-employed as the owner of a small business (his injury has not affected his intellectual capacities), and he keeps his mind off his infirmity by indulging his interests in art and music. Occasional physical therapy, available only at relatively large hospitals, keeps the muscles in his paralyzed limbs from becoming atrophied (wasting away) and from becoming painful.

The Brown Family: Mrs. Brown is about to begin hemodialysis, which is the use of an artificial kidney. She must visit a fairly sophisticated hospital three times a week for the next year. This first year of hemodialysis will cost the Brown family about $10,000. After the first year, Mrs. Brown will be able to use hemodialysis at home, for about $5,000 a year. Mr. Brown has held high-paying executive positions in large manufacturing firms, and he must remain a highly paid executive in order to pay for Mrs. Brown's hemodialysis treatments.

The Clark Family: Ms. Clark, the breadwinner in this family, is a musician and composer. She has never made much money from her music, and has to support herself and her small child by doing odd jobs. She suffers great anxiety when she has a full-time job, apparently because the combination of her job and her child does not leave her with enough time and energy to write music. She has always lived in cities, and feels that the city bustle interferes with her composing. In the past three years she has been hospitalized three times--and lost three full-time jobs--because of attacks of anxiety.

The Daniels Family: Mr. and Mrs. Daniels are young adults who have no children. Both of them are vibrant, energetic and ambitious people. Both are college teachers. One of them is sick much more often than the other one is, but they both find that they are most likely to be sick at times when they are stuck in a dull routine or in an environment that never seems to change, when they are frustrated or when they simply have nothing to do. Both of them feel at their best when they are busy with a variety of activities.

The Edwards Family: Mr. and Mrs. Edwards are middle-aged; their children have grown up, moved away and established their own households. Both these people are healthy almost all the time, but they freely admit to being lazy. They both enjoy work, but only if it is the sort of work that a person has to learn only once, and can then go on working at indefinitely without giving it any further thought. The few times when they have been sick were times when there was a great deal of excitement or there were many things to worry about, or when things were changing fast.

The Ford Family: Mrs. Ford, the breadwinnder in this family, has chronic bronchitis. She should avoid things that irritate her lungs, such as cigaret smoke and air pollution. She also should avoid situations in which she will have trouble getting oxygen into her lungs, because her lungs do not work very efficiently. She is experienced in a variety of lines of work, and could support herself and children by opening a small business.

The Environments:

The Sturdley Estate: The vastly wealthy Sturdley family maintains a small estate--six bedrooms in the main house, with outbuildings, stables (empty), tennis courts, a pool (full) and a small landing strip--in a secluded mountain spot three kilometers above sea level and several hundred kilometers from the nearest town. The only way to get there, or to get out of there, is by private airplane. The Sturdley plane flies in once every two weeks in the summer (very seldom in winter). Most of the time, the estate is deserted. The Sturdley family is looking for a family--any family, as long as it has one able-bodied adult--to stay on the estate and look after things: keep the courts swept, clean the pool occasionally, mow the lawn once a week, and such things as that. (Note: There is room for only one family to move into this environment.)

Humbleburg: Humbleburg is a very small town near the seashore in warm latitudes. It is almost true--just a few years ago it was true--that everybody in Humbleburg knows everybody else in Humbleburg and what everybody else in Humbleburg is doing. The town just manages to support itself as a commercial center for local onion farmers. There is one doctor in town, with a fairly well-equipped office, but it is about sixty kilometers to the nearest hospital. People very seldom move to Humbleburg, though the young people regularly move from Humbleburg when they turn 18 or get married, whichever comes first. Right now, however, there is one business opportunity in town, a small but stable insurance business whose proprieter is retiring. (Note: There is room for only one family to move into this environment.)

Bustle City: Bustle City is a standard, middle-sized American city, with pollution, racial tensions, economic dislocations and crime. It also has a university with a medical school, several large hospitals, several regional-headquarters offices of large business corporations, a symphony, art museums, a large turnover in many lower-level white-collar jobs, and many business opportunities.

The Rules:

The playing board is on the next page.

Each participant needs a token; a small slip of paper with the family's name on it will serve. Participants can draw the slips from a bag or box to see who represents each family.

Each group of five participants needs either one die, or a bag or box containing six slips of paper numbered from one through six.

The participants roll the die (or draw numbers) to see who goes first. Participants take turns in clockwise fashion, beginning with the one who rolled (or drew) the highest number.

Each participant's objective is to move his or her family to the environment that will be best for the family's health.

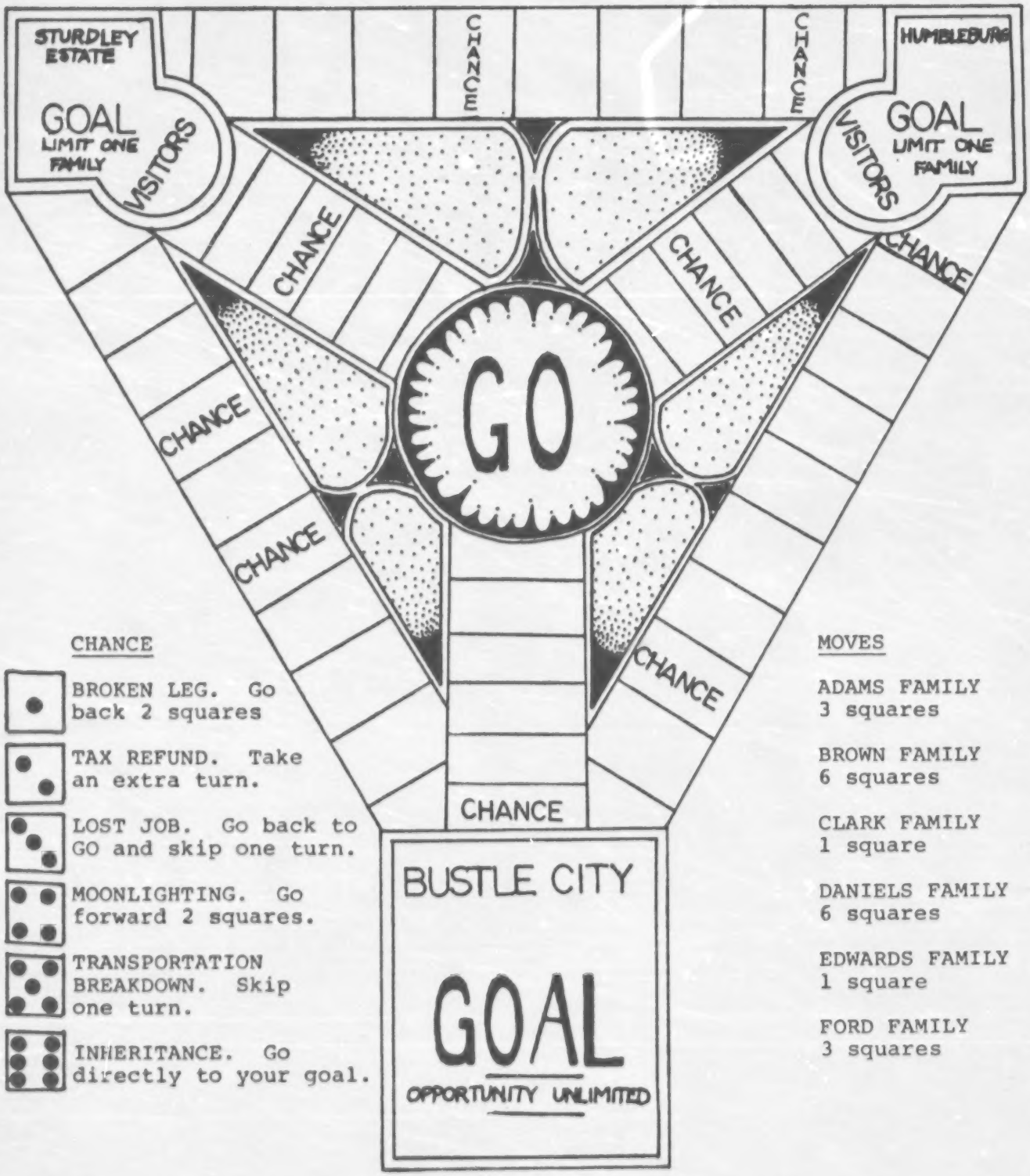
The playing board shows the number of squares each participant may move on one turn. The participant must move exactly that number of squares, no more and no fewer, unless by so doing he would overshoot his GOAL. For example, if it is one step to his GOAL and he is supposed to move three squares, he may move one square and stop on his GOAL. That will be his last turn.

On a participant's first turn, he places his token on the "GO" circle and then takes the allowed number of steps, in any direction he chooses. The "GO" circle does not count as a step. However, each "GOAL" square counts as one step.

Any number of tokens may occupy a given square at one time. However, two of the "GOAL" squares have room for one token only. The first family whose token reaches such a goal has the right to stay there. Later-arriving tokens may stay for one turn only, in the area marked "VISITORS," and must move on the next time they have a turn.

When a token lands on a square marked "CHANCE," the participant must roll the die (or draw a number) to determine his fate. The game board gives instructions for each of the possible numbers, from one through six.

The game is over when all families are in the most healthful environments they can find.



CHANCE

BROKEN LEG. Go back 2 squares

TAX REFUND. Take an extra turn.

LOST JOB. Go back to GO and skip one turn.

MOONLIGHTING. Go forward 2 squares.

TRANSPORTATION BREAKDOWN. Skip one turn.

INHERITANCE. Go directly to your goal.

MOVES

ADAMS FAMILY
3 squares

BROWN FAMILY
6 squares

CLARK FAMILY
1 square

DANIELS FAMILY
6 squares

EDWARDS FAMILY
1 square

FORD FAMILY
3 squares

ASSIGNMENT: MODELS

The game you have played in Social Science class was designed as a model to describe a real process: the process of interaction between families and their environments.

You have used other descriptive models in Science and in Mathematics. In Science you have used the bell-jar model of the lungs, and you have used the Bohr model and other models of the atom. In mathematics you have used mathematical models, or equations, that describe real physical events such as the effect of a pressure change on the volume of a sample of gas at a constant temperature.

The game you have played in Social Science and the lung model you have used in Science are models that actually do something. Such models are called simulations of the real physical or social processes they describe. There are other kinds of descriptive models--flow charts, plastic model airplanes glued to display stands, drawings representing the structure of carbon dioxide molecules, and so forth--none of which are working models.

The working models, or simulations, that social scientists use are almost all designed as games, in which people act as players. The people playing the game are the "moving parts" in the working model. How the parts move--i.e., what the people do--is determined by the rules of the simulation. The rules are designed so that the things the participants do will imitate some aspects (not all aspects) of the real process being simulated.

For example, in this simulation you rolled a die or drew a number whenever your token landed on a "CHANCE" square. This rule introduced an element of chance, or uncertainty, into the interaction between "your family" and "your environment." You had only a small number of "environments" from which to choose, and some of these had room for only a limited number of "families"; these limitations also exist in the real world. You were given information about existing health problems in your "family." In the real world, there are always existing conditions of some kind that must be taken into account: hereditary conditions, chronic diseases, physical handicaps, sensitivity to emotional stresses of different kinds, etc.

A model may or may not be useful for learning about something in the real world. Whether it is useful, or how useful it is, depends on which aspects of the real situation, and how many such aspects, are included in the model. If the model includes those aspects of the real situation which the inquirer is most interested in, and if it does not omit any important aspects related to his interest, then the model will be useful to that inquirer. If the model omits the aspects the inquirer is interested in, then the model will not be useful to that inquirer. For example, the simulation you have participated in omits religion altogether; the model would be useless to an inquirer who wanted to know how religous beliefs and religious organizations influence people's decisions about moving or affect their interactions with their environments.

Even if it does include the aspects the inquirer is interested in, a model will be useless (or even harmful) if it omits other aspects of the real situation which help to determine what happens in that situation. For example, in the simulation you have participated in, all families start at "GO," but in the real world all families start in environments (a city, a town, a farm, etc.). A real family's decision to move is always affected by their original environment. The simulation you have participated in left out this effect altogether.

Models are an important method of inquiry in two ways. One way to use models in inquiry is to build your own: to design your own simulations describing the real processes you are investigating, as you understand those processes. The other way to use models is to think about the strengths and weaknesses of simulations that other people have designed.

Improving or Replacing the Model:

Briefly, in writing, criticize the simulation you have participated in, as a model of the way a family finds a healthful environment. Think about both the good points and the bad points of the game: What does it have in it that's important? What does it omit that's important, and what does it include that's irrelevant? Suggest things that might be added to or taken away from the game: new characters added or existing characters removed; new situations added or existing ones removed; rules added to make the simulation more realistic; and so on. You might want to design another simulation of your own to replace this one.

Using Models as a Method of Inquiry:

Briefly describe what you think are the strong points and the weak points of the use of models as a method of inquiry. Think about the process of building your own model--designing your own simulation. What use would this serve? By designing simulations can you get new information? Can you find new ways to organize the information you already have? Can you discover gaps in your information? Can you present your information to others?

To start thinking about this problem, imagine that you are inquiring into a particular health problem. Think of a health problem that you can define on a particular level of analysis, from a particular point of view--for example, the problem a family has in figuring out how to pay for its health care: deciding whether to buy insurance and, if so, how much; deciding how much health care the family can afford; deciding whether to save money; and so on. In learning about this problem a person might want to use several methods of inquiry: book research about health costs, nonparticipant observation in medical facilities to determine who pays how much for what services, a questionnaire survey to determine how much people spend and where they get the money, unstructured interviews to determine how people think and feel about health care costs, etc. If you were inquiring into this problem, where could you use model-building? Could you design a simulation at the beginning to represent how you think things are in the

real world? If you did, would it help you decide what kinds of information to gather? Could you use a simulation to get information about the ways people pay for their health care? Could you use a simulation to find out how people think or feel about the costs of health care? Could you use a simulation to show other people what you have learned through other methods of inquiry? If you can use a simulation at one or another point in your inquiry, what are the strengths and weaknesses of this method? That is, how might it be better than some other method? How might it be inferior to some other method?

ASSIGNMENT: DESIGNING AN IDEAL ENVIRONMENT

Your assignment is to describe an ideally healthful environment for one of the families described in the reading, "A Simulation of Health and Environment," in this Student Text, or for another family with a different health problem. (Your teacher will indicate which family you are to write about and what its health problem is.)

Describing the Family:

Before you start designing this environment, you will need to think more about the family. You have been given very little information about the family. Begin by writing a description of the family, its members and its problems, making up details that are not given. To be sure you have covered everything of importance, think about this family from all seven points of view you have examined in previous assignments.

Distribution of Resources: What family members work for money? What do they do? How much money do they make? Does the family get any welfare or Social Security payments? What are its health expenses? Does it have health insurance?

Allocation of Responsibility: Are there legal restrictions on any family members? (For example, is there a child who is legally required to attend school?) What are the political beliefs of the family members?

Institutions and Institutional Behavior: Do any family members spend much of their time in organizations that require particular kinds of behavior (schools, government bureaucracies, business corporations)? What sort of structure does the family itself have? Who makes the decisions? Who is consulted and who is not? Are there grandparents, grown children or others whom family members feel close to? Does the family have strong ties to any religious organizations?

Shared Ideas and Traditions: Do family members have any traditional ways that might make it difficult for them to get along in some communities? Do adults in the family come from different traditions, so that they sometimes have difficulty getting along with each other? What sort of beliefs and values do family members have about health and disease?

Thinking, Emotion and Motivation: Do any members of the family have any unusual emotional requirements? Are there family members (such as children or mentally retarded individuals) who think in much different ways from other family members?

Values: What beliefs do family members have? What values do they hold to be most important? What values do they pay lip service to but not really practice?

Interaction with Environments: What sort of environment are family members accustomed to? What characteristics of their environment may be hazardous to their mental or physical health? What must they have in their environment in order to stay healthy? Are they able to adapt to a large variety of environments, or do they have special needs?

You do not need to answer every one of these questions, but you should consider all of them before you begin to describe the family. You should try to put together a realistic description of a family with the health problem that has been described to you.

Designing the Ideal Environment:

When you have described the family, design an environment that would be ideal for the purpose of keeping the whole family mentally and physically healthy. Again, consider all seven points of view. Since you are describing an ideal environment, you do not need to worry about whether such an environment actually exists. The perfect environment for preserving this family's health may be impossible to find, but if you have some idea what it would be like then you will be better able to think later about which of the real environments, the ones that can be found, would be better and which would be worse for the health of a family like this one.

READING: DIMENSIONS OF A FAMILY HEALTH MAINTENANCE PROGRAM

In previous assignments you have worked with four dimensions of health. In designing a health maintenance program for a particular family with a particular health problem, consider all four of these dimensions. Below are some questions you might think about before you begin designing your health maintenance system.

Opinions, Attitudes and Beliefs:

Do members of this family have any ideas that might be detrimental (harmful) to their health, such as beliefs about nutrition, about smoking, about drugs or about disease causation? Do members of the family need health education about any particular aspect of health? Do adults as well as children in the family need such education? Do family members have ideas about doctors, hospitals or other health-related matters which might lead them to avoid health care when they need it or seek it when they don't need it? If so, how might these ideas be changed (if you think they should be changed)?

Roles and Relationships:

Do members of this family have particularly difficult roles in health care, such as that of a person who must be constantly going into and out of health facilities for treatment? How might such a role be made easier? Do other family members feel that the family should be consulted more by health care workers? Might any family members refuse to help in the treatment of an ill family member when such help would be desirable? If such problems exist, how might they be dealt with? That is, what kind of health care should the family get, and how should family members be educated (if at all) to alter their roles in caring for other family members who are ill? What kinds of health workers do family members need to have available? Doctors? Physical therapists? Psychiatrists? Nurses? Dentists? Health educators? Others?

Technology:

What kinds of medical technology do family members need to use at home? What kinds of technology in clinics or hospitals do they need to have available? (Remember that medical technology includes not only machines but also drugs and methods of preventing, detecting and treating diseases.)

Causation, Prevention, Detection and Treatment of Disease:

What should be done to prevent disease in this family? To be sure that any new diseases are detected? To treat diseases that already exist? To treat new diseases that are likely to occur? What kinds of diseases are family members likely to get?

READING: DESIGNING A COMMUNITY HEALTH MAINTENANCE SYSTEM

In thinking about a design for a community health maintenance system, you should consider all seven points of view and all four dimensions of health. Some suggestions follow. There are, of course, many other questions that can be answered in your design.

Points of View:

Distribution of Resources: How should health care be funded? Should each patient pay for his or her own care? Should families have private health insurance they pay for themselves? Should they have private health insurance paid for by their employers? How should health workers be paid? By their patients and clients? By the patients' employers? Should the community's tax money be used to pay for some community health services?

Allocation of Responsibility: Should the community have laws about what health services should be available in the community? Should it prohibit some? Should it require some (and pay for them)? Should it require screening of citizens for certain diseases? Should it control pollution in the interest of protecting health? Should it

provide recreational facilities for children and adults to promote health? Should citizens vote on community health decisions? How much authority should experts have?

Institutions and Institutional Behavior: What organizations in the community should be involved in health maintenance? How should they be involved? In addition to community government, consider businesses, schools and religious organizations. Does the community need one or more hospitals? Neighborhood clinics? Agencies to monitor environmental control?

Shared Ideas and Traditions: Are there groups in the community whose traditions require special types of health care? Are there groups whose traditions might discourage members from seeking health care when they need it? How should the community health maintenance system help these groups?

Thinking, Emotions and Motivation: Are there groups in the community which are not sufficiently motivated to protect their own health or to seek health care when they need it? What can be done to encourage such people to care for themselves?

Values: Should the community guarantee health care as a right to every member of the community? Should each family be responsible for its own health? Should the community pay for health care for people who cannot afford it? Should the community interfere in people's lives to protect their health? Should the community try to change the way people think in order to protect their health?

Interaction with Environments: Should the community seek to reduce or eliminate air or water pollution? Should it seek to provide more parks and recreational areas for citizens? Should it control schools to make them healthful environments for children? Should it control housing arrangements? Should it provide for the removal of garbage and sewage?

Dimensions of Health:

Opinions, Attitudes and Beliefs: Should the community educate children or adults or both to make them better able to prevent disease? To make them more likely to have checkups during which new diseases can be detected? To make them more likely to seek treatment when they need it?

Roles and Relationships: What kinds of health workers should be available in the community? How many of each kind should there be? Should health facilities be operated so that family members of ill persons can have some involvement in health care? Should the community encourage treatment of persons in their own homes, or treatment in hospitals and clinics?

Technology: What kinds of medical technology should be available in the community?

Causation, Prevention, Detection and Treatment of Disease: Should the community health maintenance system provide only treatment of new and existing diseases? Should it promote disease prevention? Should it have programs for detection of diseases? Should it seek out and eliminate environmental conditions that might cause members of the community to become ill?